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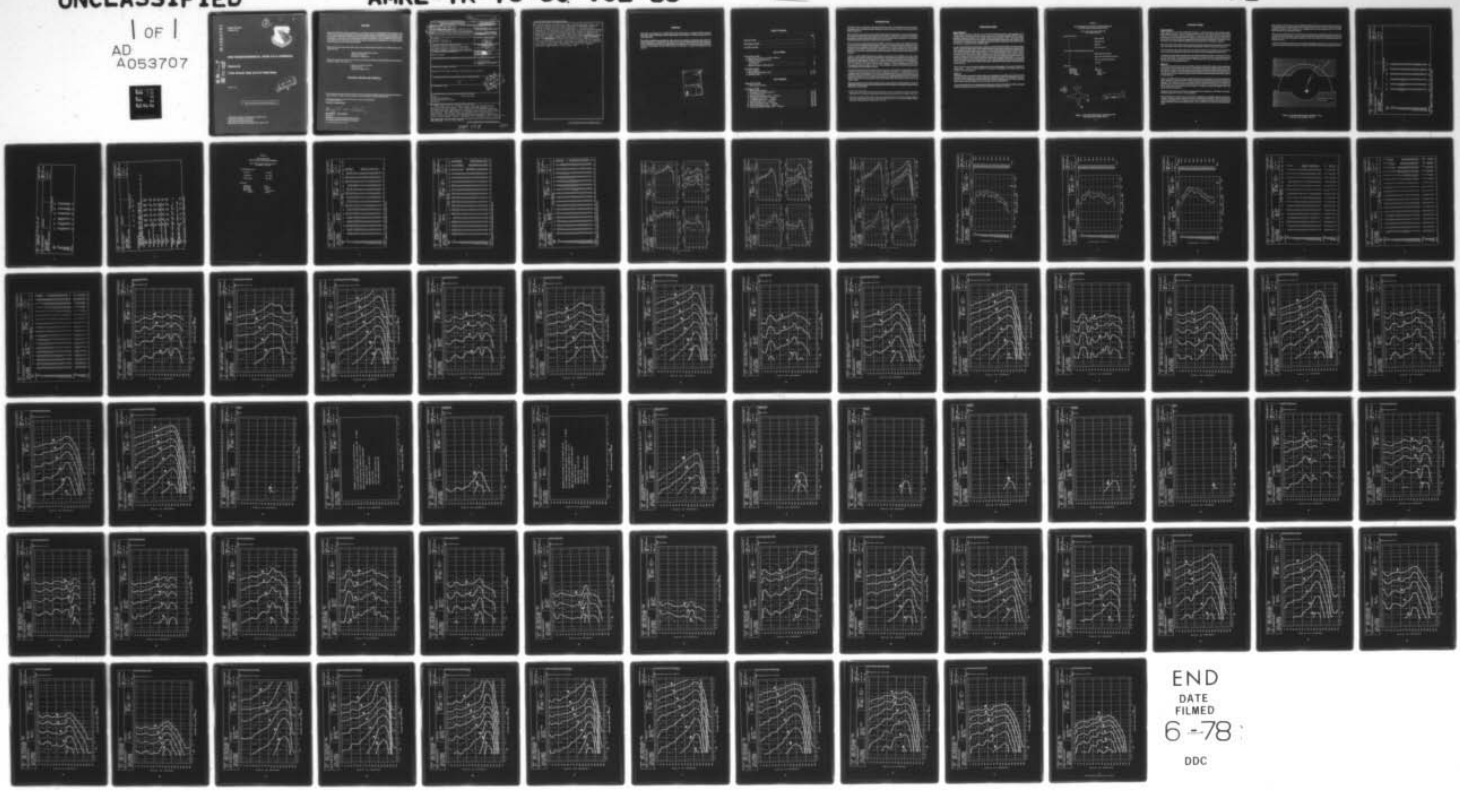

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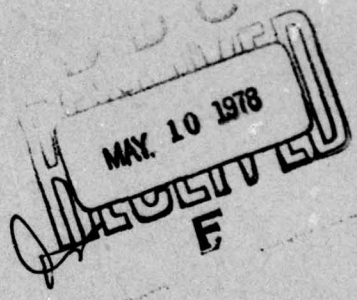
Volume 88

USAF BIOENVIRONMENTAL NOISE DATA HANDBOOK

Volume 88

T-33A Aircraft, Near and Far-Field Noise



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FOR THE COMMANDER

Henning E. von Gierke

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The USAF T-33A is a flight trainer aircraft powered by one J33-A-35 turbojet engine. This report provides measured and extrapolated data defining the bioacoustic environments produced by this aircraft operating on a concrete runup pad for three power conditions. Near-field data are reported for 4 locations in a wide variety of physical and psychoacoustic measures: overall and band sound pressure levels, C-weighted and A-weighted sound levels,

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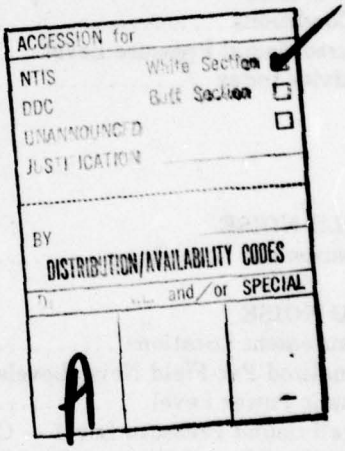
preferred speech interference level, perceived noise level, and limiting times for total daily exposure of personnel with and without standard Air Force ear protectors. Far-field data measured at 19 locations are normalized to standard meteorological conditions and extrapolated from 75-8000 meters to derive sets of equal-value contours for these same seven acoustic measures as functions of angle and distance from the source. Refer to Volume 1 of this handbook, "USAF Bioenvironmental Noise Data Handbook, Vol 1: Organization, Content and Application", AMRL-TR-75-50(1) 1975, for discussion of the objective and design of the handbook, the types of data presented, measurement procedures, instrumentation, data processing, definitions of quantities, symbols, equations, applications, limitations, etc.

PREFACE

This report was prepared by the Biodynamic Environment Branch, Aerospace Medical Research Laboratory, under Project/Task 723104, Measurement and Prediction of Noise Environments of Air Force Operations.

The authors gratefully acknowledge Mr. John Cole for his assistance in preparing this report, Mr. Robert England for his assistance in acquiring the raw data, Mr. Keith Kettler, Mr. Henry Mohlman and Mr. David Eilerman of the University of Dayton for assistance in the mechanics of data processing, and Ms. Norma Peachey and Mr. Mike Patterson for assistance in typing and preparation of the graphics.



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INTRODUCTION

The USAF T-33A is a flight trainer aircraft powered by one J33-A-35 turbojet engine. The aircraft was manufactured by the Lockheed Aircraft Corporation and the engines by Allison, a Division of General Motors Corporation.

This volume provides measured and extrapolated data defining bioacoustic environments produced by this aircraft during ground runup operations. Such data are essential to evaluate ear protection requirements, limiting personnel exposure times, voice communication capabilities, and annoyance problems associated with ground runups of the T-33A aircraft.

This volume is one of a series published by the AMRL under the same report number (AMRL-TR-75-50) as a multi-volume handbook that quantifies the noise environments produced at flight/ground crew locations and in surrounding communities by operations of Air Force aircraft and ground support equipment. The far-field, community-type, noise data in the handbook describe the noise produced during *ground operations* of aircraft, ground support equipment, and other ground-based equipment or facilities.

Volume 1 of this handbook discusses the objectives and design of the handbook, the types of data presented, measurement procedures, instrumentation, data processing, definitions of quantities, symbols, equations, applications, limitations, etc. Volume 2 provides a method and data for adjusting the handbook's far-field noise data, which are for standard meteorological conditions (15 C temperature, 70% rel humidity, 0.760 meters Hg barometric pressure), to derive comparable data for other meteorological conditions. *Refer to Volumes 1 and 2* (references 1 and 2) for such information because it is not repeated in other handbook volumes.

A cumulative index lists those aerospace systems contained in the handbook, and identifies the specific volumes containing each type of environmental noise data available (i.e., inflight/flight crew and passenger noise, near-field/ground crew noise, far-field/community noise). Volume numbers are assigned sequentially as individual voumes are published. This index is periodically updated as individual volumes are published and is available upon request from AMRL/BBE, Wright-Patterson AFB, OH 45433. Organizations on the distribution list for the handbook will automatically receive a copy of each updated index.

Direct any questions concerning the technical data in this report and other handbook volumes to: AMRL/BBE, Wright-Patterson AFB, OH 45433; AUTOVON 78-53675 or 78-53664; Commercial (513) 255-3675 or (513) 255-3664.

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1. Cole, John N., *USAF Bioenvironmental Noise Data Handbook, Volume 1: Organization, Content and Application,* AMRL-TR-75-50 (1) Aerospace Medical Research Laboratory, Wright-Patterson Air Force Base, Ohio, 1975.

2. Cole, John N., *USAF Bioenvironmental Noise Data Handbook, Volume 2: Procedure to Evaluate Effects of Non-standard Meteorological Conditions on Far-Field Noise,* AMRL-TR-75-50 (2), Aerospace Medical Research Laboratory, Wright-Patterson Air Force Base, Ohio, 1975.

NEAR-FIELD NOISE

MEASUREMENTS

AMRL acquired near-field noise data on the T-33A aircraft during ground runup operations of its turbojet engine. For these tests the aircraft was located on the "Hot Cargo" pad, Eglin AFB, FL, with no significant reflecting surfaces in the vicinity except the ground plane. Table 1 gives the surface meteorological conditions and the four engines and ground support equipment power conditions. The ground-crew chief selected power conditions and near-field locations generally used during routine maintenance or engine runup for preflight checks.

At each near-field location a test engineer randomly moved a hand-held microphone in and around each location, probing all areas where a crew member's head would normally be located. He reocrded all the noise samples on magnetic tape. During analysis of each sample he determined the one-third octave band root-mean-square sound pressure using a 4- or 8-second integration time to derive a power-averaged level for each location. Figure 1 shoes the four near-field locations where ground crew are usually located for maintenance and/or preflight checkout operations. Estimates of noise levels at other locations are difficult in the near-field since the noise source is spatially distributed, i.e., not a point source. The noise levels at near-field locations can vary widely depending upon relative distances from each noise source (intake noise, exhaust noise, panel resonances, internal engine noise through the engine wall, etc.).

Table 1 lists the numeric/alphabetic designators used on the data pages in this report to identify the measurement locations and test conditions. For example, the designator 1/A means ground crew location 1 and test condition A.

RESULTS

The measured data presented in Table 2 define the sound pressure levels (SPL) produced by the T-33A aircraft at the four ground crew locations. This table includes the overall, 1/3 octave band, and octave band levels. From these data one can calculate the variety of measures given in Table 3, which are widely used to assess the effects of noise on personnel and their performance.

All near-field data are for the meteorological conditions at the time of test but are valid for all typical airbase meteorology because of the short sound propagation distances involved.

TABLE 1

MEASUREMENT LOCATIONS AND TEST CONDITIONS FOR NEAR-FIELD NOISE MEASUREMENTS

T-33A Aircraft, Ground Runup, Eglin AFB
Tail # 63655, 15 July 1971

Ground Crew Location	
1	Operator MD-3M
2	Wheel Chock Pull
3	Marshall
4	Crew Chief Observer
Aircraft Engine (and Support Equipment) Operation	
A	MD-3M Operating (unloaded)
B	Engine Start, MD-3M Operating (loaded)
C	Idle Power and MD-3M (unloaded)
D	Idle Power
Meteorology	
Temperature	25.6 C
Bar Pressure	0.758 M Hg
Rel Humidity	85 %
Wind — Speed	1 M/Sec (2 Kt)
— Direction	270 Deg.

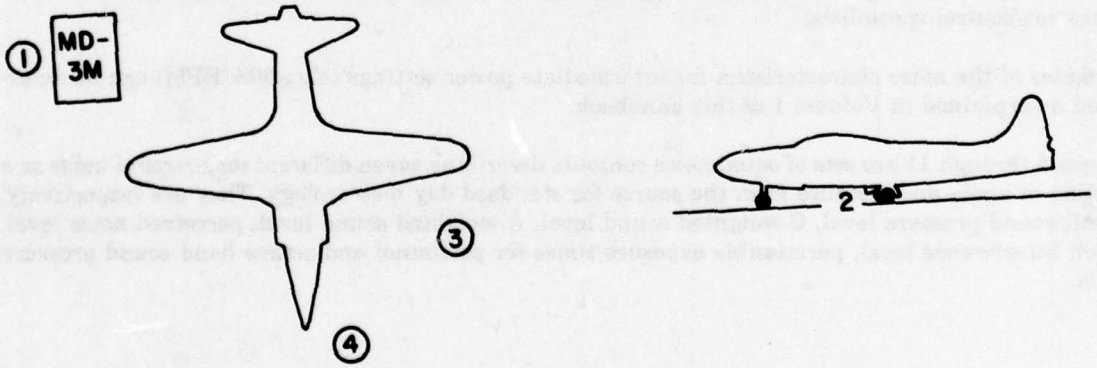


Figure 1. Near-Field Measurement Locations on the Hot Cargo Pad at Eglin AFB FL

FAR-FIELD NOISE

MEASUREMENTS

AMRL acquired the near and far-field data during a 1- 2-hour test period, thus keeping similar meteorological conditions. Figure 2 shows the aircraft on the "Hot Cargo" pad and its orientation relative to 19 microphone measurement sites on a semicircle. The center of the 75 meter radius semicircle used in surveying the J33-A-35 engine was on the ground directly below the intersection of the aircraft's centerline and the plane passing through the engine's exhaust plane. The ground runup pad did not have a blast deflector; therefore, the jet exhaust was in a "free-flow" condition.

Table 4 provides cockpit readouts of engine speed in percent for each power setting used in the far-field tests. Also listed in this table are the surface meteorological conditions during data acquisition.

All 19 microphone measurement sites are in the acoustic far-field of their respective source where the sound wave-fronts spherically diverge and the noise source may be regarded as a point source.

A portable microphone/tape recorder system was used to sequentially record 5 to 10 seconds of noise at each far-field location. The micorphone was hand-held 1.7 meters (5-1/2 feet) above the ground and pointed at the source (0° angle of incidence). These samples were then time-integrated to derive a root-mean square sound pressure level.

RESULTS

Table 5 lists the overall and 1/3 octave band SPL measured at the far-field locations under meteorological conditions at the time of the test. Data in all other figures and tables are based on these levels. These data were normalized to 100 meters distance and standard meteorological conditons (15 C temperature, 70% relative humdity, 0.760 meter Hg barometric pressure) and used to derive the graphic data in Figure 3 which provides a compact summary of the far-field noise characteristics of the T-33A aircraft in a standard format.

Figure 4 and Table 6 present two basic acoustic measures, the acoustic power levels and the directivity index, respectively. The acoustic power level describes the power radiated by the source as a function of frequency. The directivity index is a standard acoustical engineering measure that describes the geometric way in which the source radiates this power as a function of both frequency and angle from source. These basic source measures are primarily of interest for acoustical engineers and noise generation/control specialists.

Estimates of the noise characteristics for intermediate power settings (e.g., 80% RPM) can be determined as explained in Volume 1 of this handbook.

Figures 5 through 11 are sets of equal noise contours describing seven different measures of noise as a function of angle and distance from the source for standard day meteorology. They are respectively, overall sound pressure level, C-weighted sound level, A-weighted sound level, perceived noise level, speech interference level, permissible exposure times for personnel and octave band sound pressure levels.

Data excessively influenced by spurious background/electronic noise were eliminated from all figures and tables. No data are presented beyond the 160 degree location for the idle power settings because of background/electronic noise. Typically, the A-weighted levels for these angles are from 5 to 10 dBA below the level at the 160 degree location.

Test personnel performed noise surveys during quiet periods when the background noise was minimal, e.g., early in the morning when no other aircraft or engine test stands were operating. Data eliminated because they were near the background/electronic noise were generally not significant because the levels were so low.

Volume 2 of the handbook describes the influence of meteorology on far-field noise environments, and provides, if required, the factors necessary to adjust the handbook's standard meteorological day data.

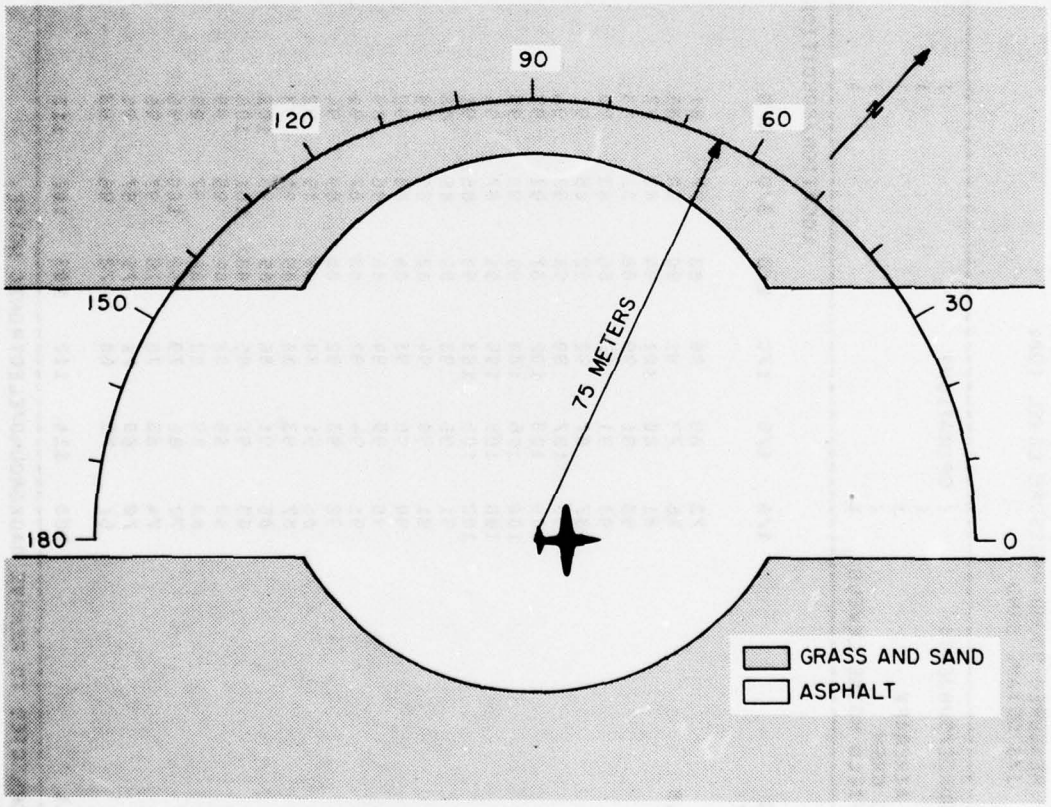


Figure 2. Far-Field Measurement Locations on the Hot Cargo Pad at Eglin AFB, FL

TABLE: 2 MEASURED SOUND PRESSURE LEVEL (DB)
1/3 OCTAVE BAND

IDENTIFICATION:
OMEGA 3.2
TEST 71-019-108
RUN 01
04 DEC 74
PAGE F1

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
GROUND CREW
NEAR FIELD NOISE LEVELS

OPERATION:

FREQ (HZ)	LOCATION/CONDITION 1/A	1/B	1/C	2/D	3/D	4/D
25	73	69	85	83	77	81
31.5	76	72	91	90	80	85
40	81	80	101	94	82	87
50	93	91	99	88	82	88
63	93	91	97	86	83	90
80	87	87	92	92	85	91
100	98	107	99	93	93	96
125	100	108	102	87	91	97
160	100	106	108	90	90	95
200	100	105	105	91	87	91
250	102	106	103	90	86	91
315	91	96	93	86	85	88
400	91	98	94	82	86	89
500	90	96	93	84	88	90
630	90	95	94	86	86	89
800	91	94	92	83	87	91
1000	92	93	92	88	89	94
1250	86	91	88	95	89	92
1600	87	93	88	85	90	93
2000	85	91	86	85	95	100
2500	83	91	85	88	101	106
3150	80	89	82	86	95	95
4000	80	89	82	86	97	95
5000	77	86	79	82	100	96
6300	74	83	76	79	97	96
8000	70	80	71	75	97	94
10000	67	75	68	72	96	93
OVERALL	108	114	112	103	107	110

LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

TABLE: 2 MEASURED SOUND PRESSURE LEVEL (DB) OCTAVE BAND

IDENTIFICATION:
OMEGA 3.2
TEST 71-019-188
RUN 81
04 DEC 74
PAGE J1

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
GROUND CREW
NEAR FIELD NOISE LEVELS

OPERATION:

FREQ (HZ)	LOCATION/CONDITION 1/A	1/B	1/C	2/D	3/D	4/D
31.5	83	81	101	95	85	89
63	96	95	102	94	88	94
125	104	112	109	95	96	100
250	104	109	107	94	91	95
500	95	101	98	89	91	94
1000	95	97	96	96	93	97
2000	90	96	91	91	102	107
4000	84	93	86	89	102	100
8000	76	85	77	81	101	99
OVERALL	108	114	112	103	107	110

TABLE: 3 MEASURES OF HUMAN NOISE EXPOSURE

IDENTIFICATION: OMEGA 3.2 TEST 71-819-108 RUN 01 04 DEC 74 PAGE H1

NOISE SOURCE/SUBJECT: T-33A AIRCRAFT GROUND CREW NEAR FIELD NOISE LEVELS

OPERATION:

	LOCATION/CONDITION					
	1/A	1/B	1/C	2/D	3/D	4/D
HAZARD/PROTECTION						
C-WEIGHTED OVERALL SOUND LEVEL (OASLC IN DBC) AT EAR						
A-WEIGHTED OVERALL SOUND LEVEL (OASLA IN DBA) AT EAR						
MAXIMUM PERMISSIBLE TIME (T IN MINUTES) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)						
NO PROTECTION						
OASLC	108	114	112	102	106	109
OASLA	100	105	103	99	107	110
T	30	13	18	36	9	5
MINIMUM QPL EAR MUFFS						
OASLA*	85	92	90	78	82	84
T	404	120	170	960	679	480
AMERICAN OPTICAL 1700 EAR MUFFS						
OASLA*	81	87	85	73	76	78
T	807	285	404	960	960	960
V-51R EAR PLUGS						
OASLA*	78	83	81	73	77	79
T	960	571	807	960	960	960
AMERICAN OPTICAL 1700 EAR MUFFS PLUS V-51R EAR PLUGS						
OASLA*	64	69	68	61	65	67
T	960	960	960	960	960	960
H-133 GROUND COMMUNICATION UNIT						
OASLA*	75	81	79	73	80	84
T	960	807	960	960	960	480
COMMUNICATION						
PREFERRED SPEECH INTERFERENCE LEVEL (PSIL IN DB)						
PSIL	93	98	95	92	95	99
ANNOYANCE						
PERCEIVED NOISE LEVEL, TONE CORRECTED (PNLT IN PNDB)						
TONE CORRECTION (C IN DB)						
PNLT	115	121	117	115	123	126
C	1	1	1	3	2	3

* BASED ON CALCULATED SPL SPECTRUM UNDER PROTECTIVE DEVICE.

TABLE 4

TEST CONDITIONS FOR FAR-FIELD NOISE MEASUREMENTS

T-33A Aircraft Ground Runups, Eglin AFB, FL
Tail # 63655, 15 July 1971

Aircraft Engine Operation

Idle Power	35 % RPM
Runup Power	50 % RPM
Military Power	100 % RPM

Meteorology

Temperature	25.6 C
Bar Pressure	0.758 M Hg
Rel Humidity	85 %
Wind — Speed	1 M/Sec (2 Kts)
— Direction	270 Deg

TABLE 5 MEASURED SOUND PRESSURE LEVEL (DB)
1/3 OCTAVE BAND
DISTANCE = 75 METERS

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-045
RUN 01
09 MAY 75
PAGE 2

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
IDLE POWER
35% RPM
FREE FLOW

METEOROLOGY:
TEMP = 26 C
BAR PRESS = .758 M HG
REL HUMID = 85 %

FREQ (HZ)	ANGLE (DEGREES) 0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
25			66<			67<		68<			66<			68<	67<		67<		
31.5	66<	67<	67<	69<	68<	69<	71<	73<	71<	71<	72<	69<		72<	73<	72<	72<		
40	68<	67<	68<	70<	71<	71<	73<	75<	74<	71<	72<	73<	68<	76<	77	76<	73<		
50	65<	65<	64<	66<	69<	71<	72<	75	71<	71<	71<	73	67<	74	76	75	68<		
63	68<	68<	66<	67<	70<	70<	73<	73<	74<	73<	72<	73<	69<	76<	78	75<	67<		
80	74	73	72<	72<	74	74	76	77	76	75	75	77	73	79	80	77	69<		
100	73<	73<	73<	73<	75	73<	74<	76	75	74<	73<	76	70<	78	78	74<			
125	70<	68<	68<	71<	70<	69<	70<	71<	72<	69<	71<	71<	67<	75	76	72<			
160	69<	69<	69<	70<	68<	67<	69<	73	73	73	75	75	70<	78	78	74			
200	71<	70<	71<	70<	70<	71<	72<	76	77	78	79	80	76	80	81	77			
250	71	69<	71	69<	72	73	73	75	77	76	78	80	75	79	80	75			
315	66	64<	68	68	69	69	69	69	71	71	72	75	72	74	71	69			
400	66	65	68	68	69	67	69	71	73	73	74	77	73	76	78	69	52<		
500	65	66	65	67	68	68	69	70	71	71	73	77	74	74	69	67	51<		
630	63	65	67	66	68	68	68	71	72	71	73	78	75	74	69	66	51<		
800	64	66	69	70	67	70	70	72	74	74	74	76	71	71	69	65	53<		
1000	63	63	64	65	65	66	65	68	69	70	72	74	67	70	66	65	61		
1250	69	67	75	80	78	68	73	66	67	74	71	73	70	73	71	73	71		
1600	67	63	65	69	67	66	65	65	65	66	70	69	64	63	60	61	54		
2000	63	59	60	63	61	62	63	65	64	66	69	73	64	61	60	57	51		
2500	65	62	62	62	64	62	63	65	61	62	67	73	61	58	60	59	53		
3150	61	58	60	61	59	60	59	60	58	58	65	72	58	58	58	55	48		
4000	63	58	62	62	61	58	58	57	60	58	65	70	62	62	61	57	48		
5000	62	58	61	60	59	57	58	57	59	58	62	66	59	59	56	53	44		
6300	58	54	56	56	55	53	52	52	54	52	58	59	52	52	50	49	40<		
8000	57	52	53	54	53	52	51	51	50	49	55	56	48	49	47<	46<			
10000	53	49	50	49	48	47	47	46	46	44<	49	50	43<	44<	42<	40<			
OVERALL	82	81	82	84	84	83	84	86	86	86	87	89	84	88	89	86	79		

< LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

TABLE: 5

MEASURED SOUND PRESSURE LEVEL (DB)
1/3 OCTAVE BAND
DISTANCE = 75 METERS

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
50% RPM
FREE FLOW

METEOROLOGY:
TEMP = 26 C
BAR PRESS = .758 M HG
REL HUMID = 85 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-045
RUN 02
09 MAY 75
PAGE 2

FREQ (HZ)	ANGLE (DEGREES) 0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
25	66<	68<	67<	66<		66<	67<	68<	68<	70<	71<	74<	75<	78	79	79	80	79	82
31.5	68<	73<	71<	68<	69<	68<	69<	70<	71<	72<	72<	75<	75<	79	81	81	81	80	80
40	67<	75<	74<	71<	73<	74<	72<	73<	75<	75<	76	79	80	84	85	84	82	82	80
50	68<	71<	73	70<	71<	73<	72<	73	74	76	76	78	82	84	86	85	78	77	75
63	71<	72<	71<	71<	73<	73<	74<	73<	76<	76<	78	80	85	85	87	85	78	72<	69<
80	75	74	74	74	74	75	77	78	78	79	82	84	87	88	91	88	79	65<	67<
100	83	79	79	79	79	80	80	82	83	85	87	89	91	94	95	89	81	72<	69<
125	79	79	78	79	78	79	79	81	83	84	85	87	89	91	92	85	76	65<	64<
160	78	77	78	79	76	76	78	79	80	81	83	84	85	88	89	81	69<	62<	
200	77	75	76	75	76	75	78	79	79	81	82	84	84	85	86	76			
250	75	74	75	75	75	76	77	78	79	80	83	85	85	82	82	72			
315	74	74	75	76	77	77	77	79	79	81	84	86	88	85	81	72	58<		
400	74	75	76	77	77	76	78	80	80	82	85	86	87	85	82	70	55<		
500	74	75	77	78	79	77	79	80	81	82	84	88	89	82	79	66	51<	50<	
630	71	74	75	77	79	76	80	80	82	83	85	88	88	82	77	64	52<	51<	51<
800	72	76	77	78	78	78	79	82	83	85	88	90	89	82	76	65	52<	49<	50<
1000	69	72	72	74	75	74	77	77	80	82	86	87	83	77	72	62	50<	47<	48<
1250	71	72	72	73	74	73	73	76	78	80	86	87	83	76	70	62	52	46<	48<
1600	72	71	70	73	73	75	74	74	77	78	82	85	81	74	69	60	51	45<	47<
2000	75	71	69	71	73	74	74	74	77	77	82	79	76	71	66	62	51	45<	46<
2500	80	76	74	76	77	74	72	70	74	74	81	78	74	71	66	66	56	50	50
3150	74	70	70	73	72	71	71	70	72	71	78	75	70	65	60	56	50	44<	45<
4000	72	71	72	74	72	70	71	69	70	72	79	80	74	67	63	56	52	45	46
5000	76	74	75	75	74	71	73	71	70	73	78	80	75	68	64	57	53	46	47
6300	71	70	70	71	71	68	70	70	72	77	82	81	74	68	62	54	49	43<	44
8000	70	69	68	69	70	67	69	68	73	76	84	84	77	73	66	55	49	45<	45<
10000	65	64	64	66	64	65	63	60	62	63	70	71	66	63	58	50	44<	38<	37<
OVERALL	89	88	88	89	89	89	90	91	93	94	97	99	99	99	100	95	89	86	86

< LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

TABLE: 5

MEASURED SOUND PRESSURE LEVEL (DB)
1/3 OCTAVE BAND
DISTANCE = 75 METERS

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-045
RUN 03
09 MAY 75
PAGE 2

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
MILITARY POWER
100% RPM
FREE FLOW

METEOROLOGY:
TEMP = 26 C
BAR PRESS = .758 M HG
REL HUMID = 85 %

FREQ (HZ)	ANGLE (DEGREES) 0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
25	70<	73<	71<	72<	75<	74<	77<	78	79	79	82	83	85	89	92	93	91	78	79
31.5	73<	73<	75<	74<	75<	75<	78	78	79	81	83	84	88	92	93	94	91	79	76<
40	77	75<	76	75<	78	79	80	80	81	82	85	88	94	96	98	96	93	77	75<
50	74	76	76	76	79	78	80	81	82	84	88	91	96	98	100	98	94	71<	71<
63	77<	78	77	80	82	80	81	83	85	87	89	94	100	101	104	101	93	68<	67<
80	79	78	79	82	81	82	83	85	87	89	91	94	101	103	105	101	92	65<	66<
100	81	81	82	84	83	84	85	86	88	91	92	96	103	107	107	100	88	66<	
125	84	84	83	87	85	87	88	89	91	93	95	98	104	110	109	102	86	67<	
160	85	84	86	88	87	88	90	91	94	95	96	98	104	112	110	102	85	65<	62<
200	87	86	88	87	88	89	89	92	93	95	96	99	103	111	109	99	87	63<	
250	87	84	86	86	85	86	88	91	92	94	95	98	101	106	107	97	87	61<	60<
315	87	85	88	87	88	89	89	90	92	94	96	99	103	106	106	96	86	64<	61<
400	85	88	90	89	90	89	91	92	95	96	99	102	105	108	105	94	85	62	60<
500	82	87	89	90	92	92	93	95	96	98	99	102	105	106	104	88	80	59<	55<
630	87	86	87	88	90	91	93	96	96	98	98	100	103	104	99	83	76	55<	53<
800	85	85	87	87	90	89	91	91	94	96	99	101	102	101	99	85	74	54	51<
1000	83	83	85	86	87	89	91	93	95	96	98	99	99	101	94	82	71	52<	48<
1250	78	83	85	83	84	86	87	89	92	94	98	99	99	98	92	80	71	50	46<
1600	79	81	82	83	84	89	89	89	93	95	94	95	97	95	88	76	68	49<	45<
2000	75	80	80	83	84	88	88	87	91	93	94	95	97	95	87	75	67	48	44<
2500	74	78	79	81	81	83	87	83	90	92	92	93	95	91	83	73	65	46	41<
3150	78	82	82	84	82	83	85	82	88	89	90	91	92	86	80	69	63	46<	40<
4000	73	78	79	80	79	82	84	83	86	87	89	91	92	85	80	67	61	44<	39<
5000	68	75	76	79	77	79	83	84	86	87	87	89	90	84	78	65	59	41<	36<
6300	67	75	75	78	76	79	82	82	87	86	86	88	89	81	75	65	57	39<	35<
8000	64	73	74	77	75	79	84	82	90	88	87	89	88	82	75	65	56	38<	
10000	62	72	76	75	74	77	82	82	89	86	86	90	89	82	74	63	54	37<	34<
OVERALL	96	97	98	99	100	101	102	103	106	107	109	111	115	118	117	110	101	84	82

< LEVEL CORRECTED TO REMOVE BACKGROUND/ELECTRONIC NOISE.

FIGURE: NORMALIZED FARFIELD NOISE LEVELS

3 DISTANCE = 100 METERS

IDENTIFICATION:
ONEGA 1.4
TEST 75-002-045
RUN 01
09 MAY 75
PAGE 6

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
IDLE POWER
35% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

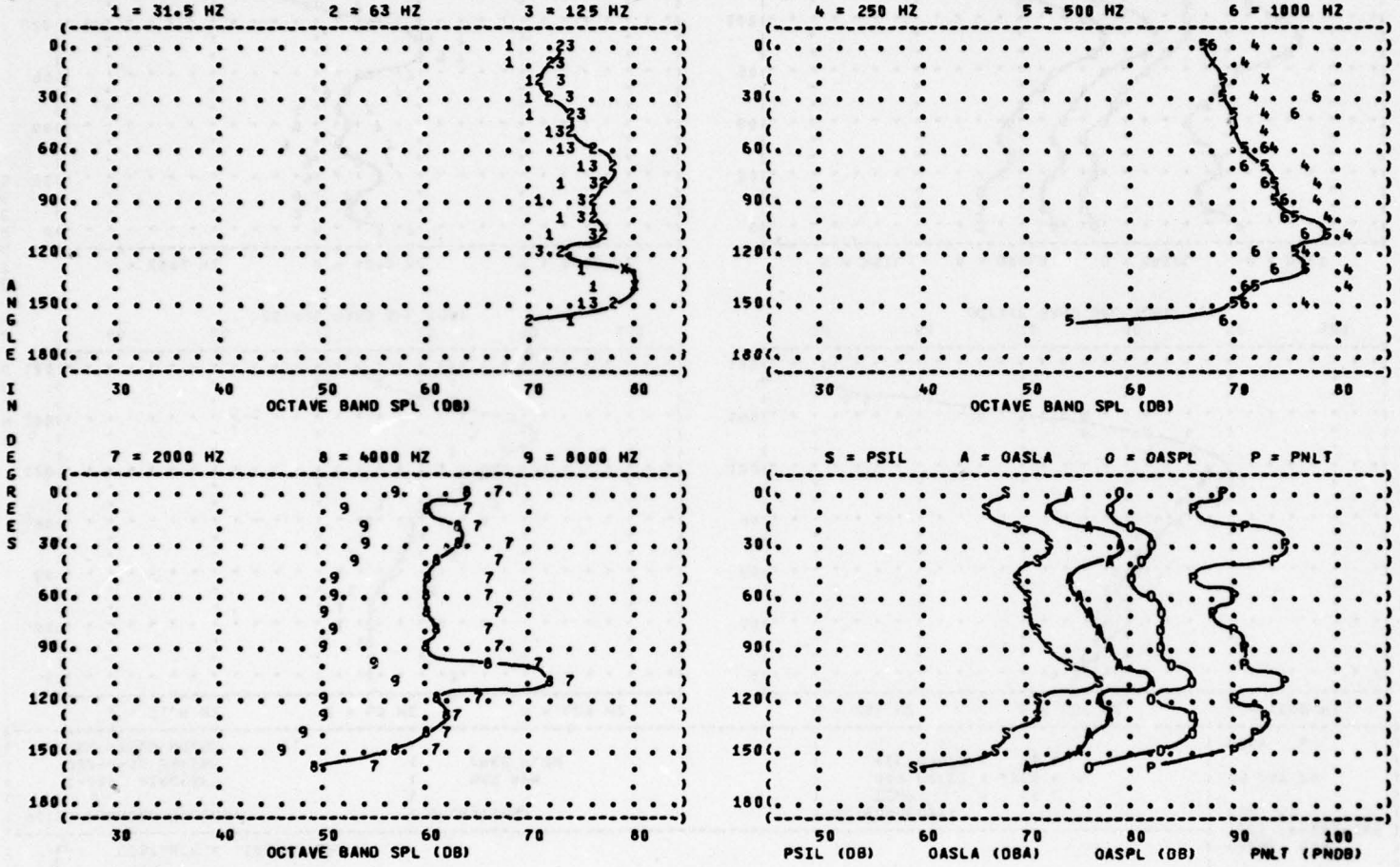


FIGURE: NORMALIZED FARFIELD NOISE LEVELS

3

DISTANCE = 100 METERS

IDENTIFICATION:

OMEGA 1.4
TEST 75-082-045
RUN 02

09 MAY 75

PAGE 6

NOISE SOURCE/SUBJECT:

T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:

50% RPM
FREE FLOW

METEOROLOGY:

TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

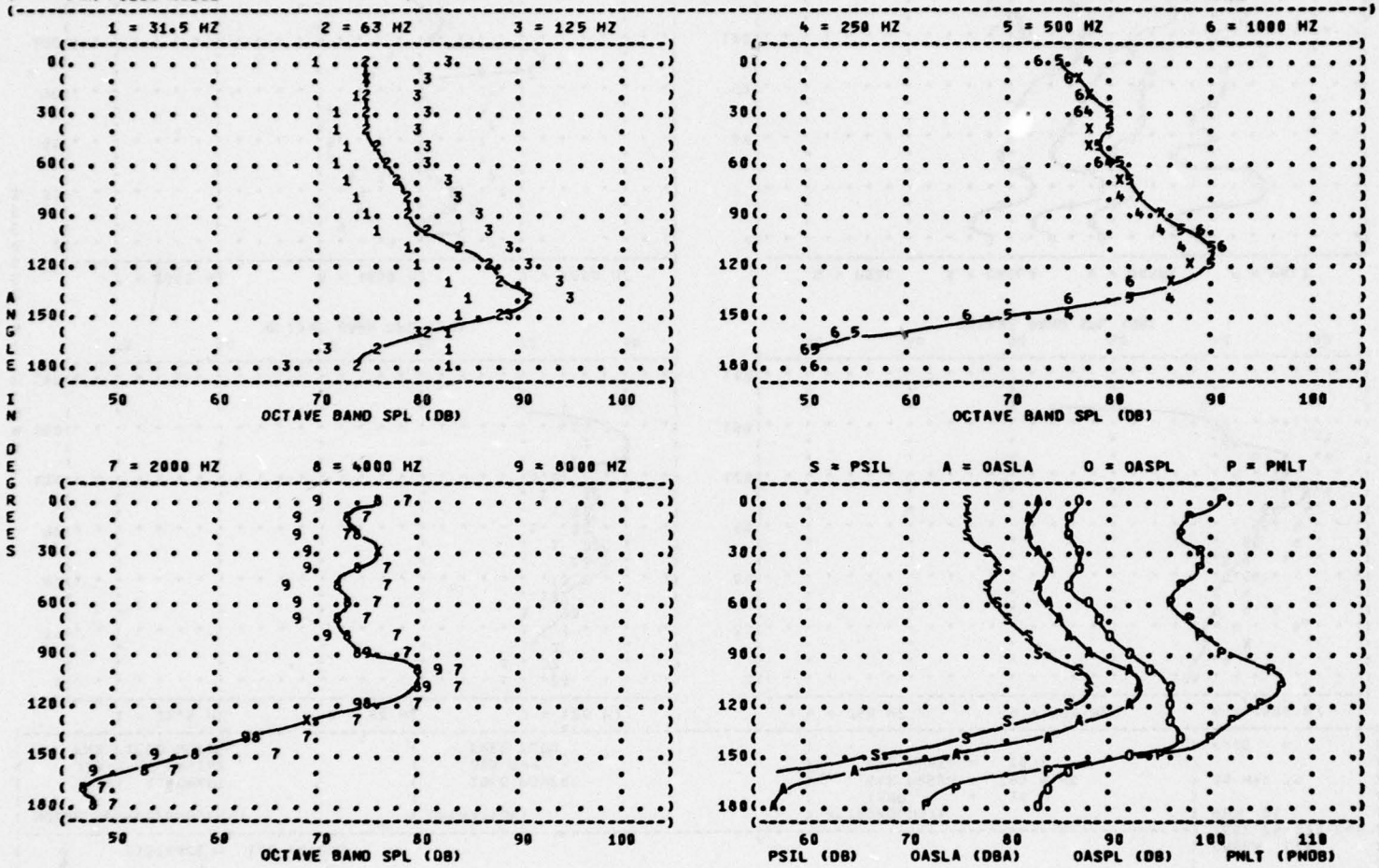


FIGURE: NORMALIZED FARFIELD NOISE LEVELS

3 DISTANCE = 100 METERS

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
MILITARY POWER
100% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-045
RUN 03
09 MAY 75
PAGE 6

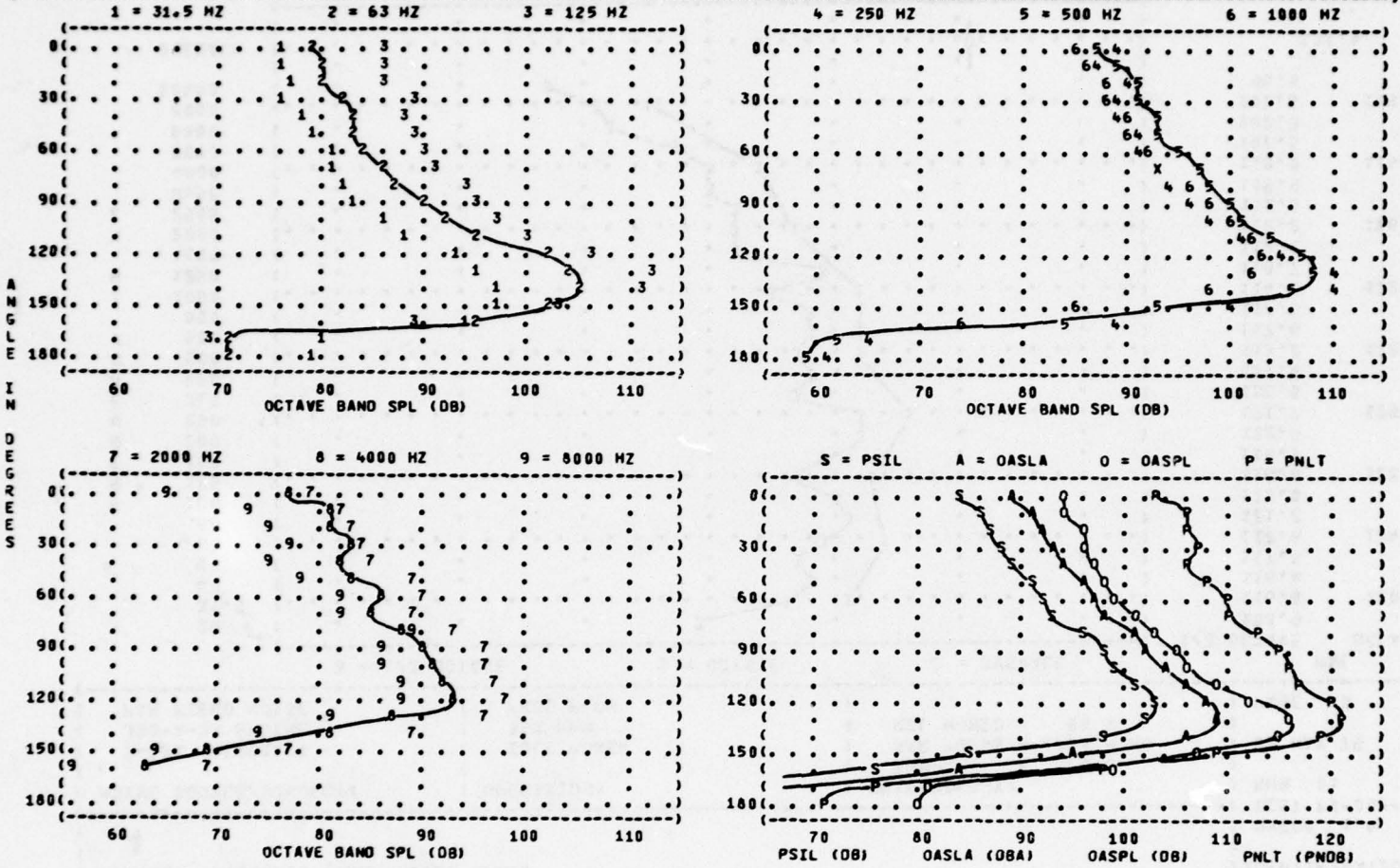


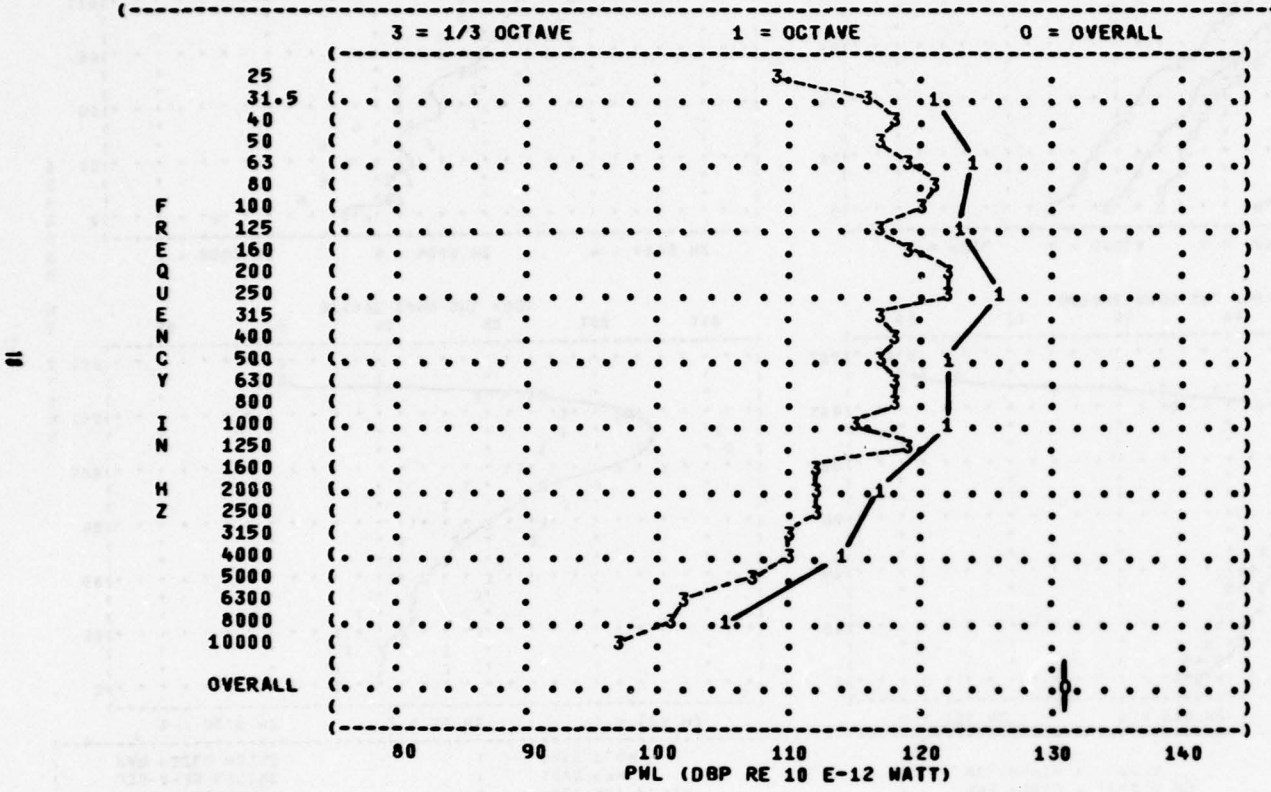
FIGURE: 4 ACOUSTIC POWER LEVEL (PWL)

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
IDLE POWER
35% RPM
FREE FLOW

METEOROLOGY:
TEMP = 26 C
BAR PRESS = .758 M HG
REL HUMID = 85 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-045
RUN 01
09 MAY 75
PAGE 3



	PWL 1/3 OCTAVE	PWL OCTAVE
25	108.9	
31.5	116.0	120.7
40	118.4	
50	117.5	
63	118.6	124.2
80	121.2	
100	120.0	
125	116.6	123.4
160	118.7	
200	122.5	
250	121.7	125.7
315	116.5	
400	117.8	
500	117.2	122.3
630	117.6	
800	117.6	
1000	114.6	122.1
1250	118.7	
1600	112.0	
2000	112.2	116.8
2500	111.8	
3150	109.9	
4000	110.0	114.0
5000	107.5	
6300	102.3	
8000	100.6	105.2
10000	96.8	
OVERALL		131.4

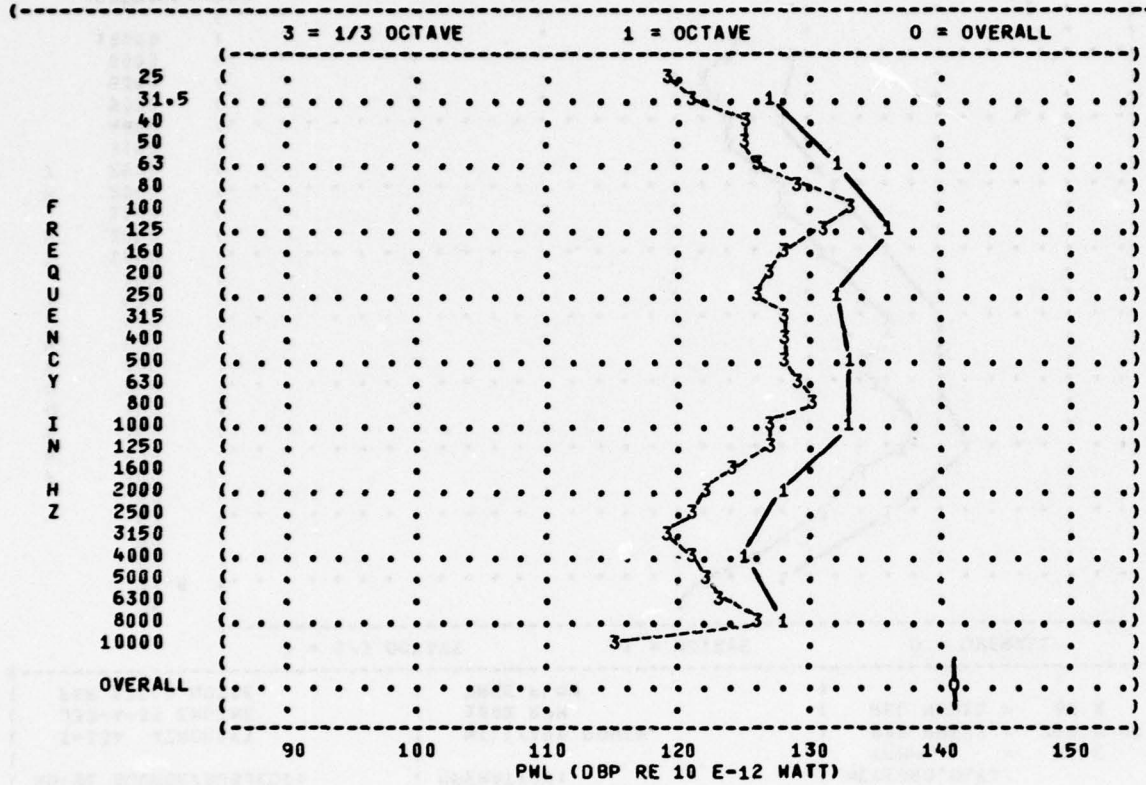
FIGURE: 4 ACOUSTIC POWER LEVEL (PWL)

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
50% RPM
FREE FLOW

METEOROLOGY:
TEMP = 26 C
BAR PRESS = .758 M HG
REL HUMID = 85 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-045
RUN 02
09 MAY 75
PAGE 3



	PWL 1/3 OCTAVE	PWL OCTAVE
25	119.4	
31.5	120.7	126.9
40	124.5	
50	124.6	
63	126.0	131.7
80	129.0	
100	133.4	
125	131.1	136.2
160	128.3	
200	126.5	
250	126.0	131.5
315	127.6	
400	127.9	
500	128.5	133.1
630	128.6	
800	130.2	
1000	126.6	132.9
1250	126.5	
1600	124.5	
2000	122.2	127.7
2500	121.5	
3150	119.0	
4000	120.8	125.4
5000	121.7	
6300	123.3	
8000	126.2	128.2
10000	115.4	
OVERALL		141.2

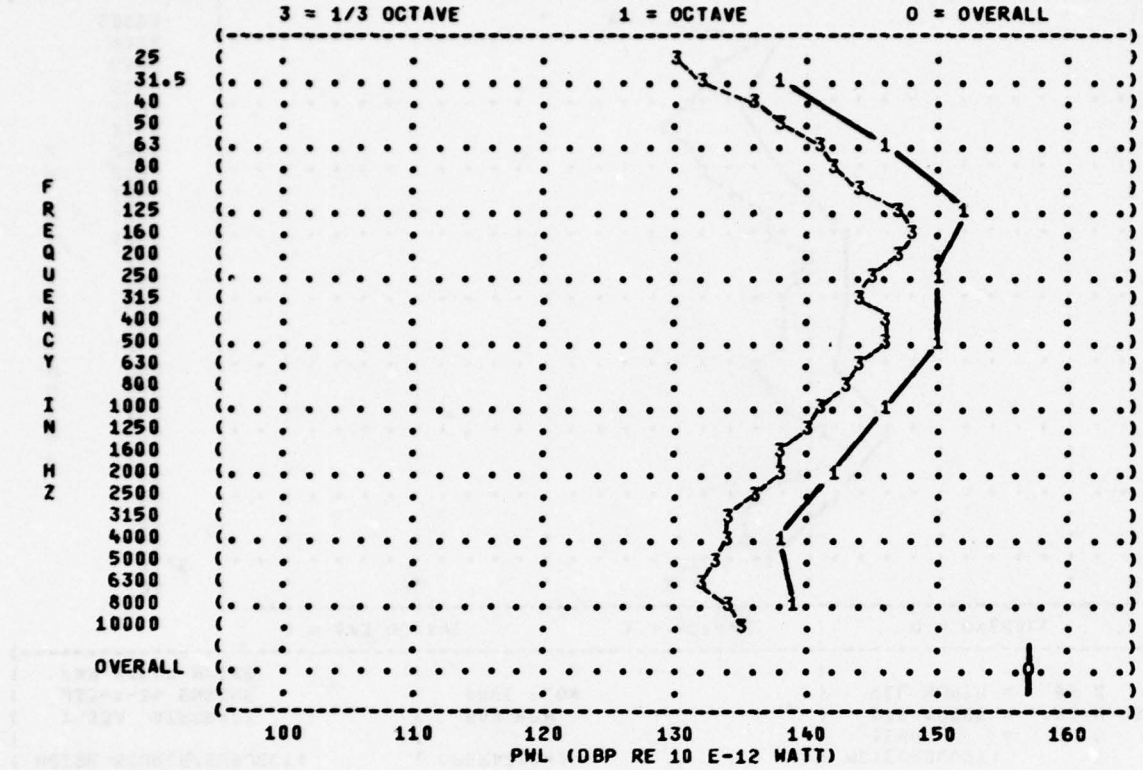
FIGURE: 4 ACOUSTIC POWER LEVEL (PWL)

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
MILITARY POWER
100% RPM
FREE FLOW

METEOROLOGY:
TEMP = 26 C
BAR PRESS = .758 M HG
REL HUMID = 85 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-045
RUN 03
09 MAY 75
PAGE 3



	PWL 1/3 OCTAVE	PWL OCTAVE
25	130.4	
31.5	132.1	138.2
40	135.9	
50	138.8	
63	141.2	145.6
80	142.3	
100	144.4	
125	147.2	151.8
160	148.5	
200	147.4	
250	144.6	150.5
315	144.5	
400	145.9	
500	145.6	149.9
630	143.6	
800	142.7	
1000	141.4	146.3
1250	140.2	
1600	138.3	
2000	137.9	142.3
2500	136.1	
3150	134.2	
4000	133.7	138.3
5000	132.7	
6300	132.3	
8000	134.2	138.8
10000	135.1	
OVERALL		156.8

TABLE: 6 DIRECTIVITY INDEX (DB)

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-045
RUN 01
09 MAY 75
PAGE 4

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
IDLE POWER
35% RPM
FREE FLOW

METEOROLOGY:
TEMP = 26 C
BAR PRESS = .758 M HG
REL HUMID = 85 %

FREQ (HZ)	ANGLE (DEGREES) 0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
1/3 OCTAVE																			
25			3			3		5			3			4	4		4		
31.5	-4	-4	-4	-2	-2	-2	0	3	0	-0	1	-1		1	2	2	1		
40	-5	-6	-5	-4	-2	-2	-0	1	1	-2	-1	-0	-5	3	4	3	0		
50	-7	-7	-8	-6	-3	-2	-0	3	-2	-1	-1	1	-5	2	4	3	-4		
63	-5	-5	-7	-6	-3	-3	-0	0	1	-0	-1	0	-4	3	5	2	-6		
80	-2	-3	-3	-3	-2	-2	0	1	0	-1	-1	1	-3	3	4	1	-7		
100	-1	-2	-2	-2	1	-2	-1	2	1	-1	-1	1	-4	3	3	-1			
125	-1	-3	-3	-0	-1	-2	-1	-0	0	-2	-1	-0	-4	4	4	1			
160	-4	-4	-4	-3	-5	-6	-4	-0	-1	-0	1	1	-4	4	5	0			
200	-6	-7	-6	-7	-7	-6	-5	-1	0	1	2	3	-1	3	4	0			
250	-5	-7	-5	-7	-4	-4	-3	-1	0	-0	2	4	-1	3	4	-1			
315	-5	-7	-3	-3	-2	-2	-2	-2	0	-0	1	4	1	3	0	-2			
400	-6	-8	-5	-4	-4	-6	-3	-1	0	0	2	4	0	4	-3	-3	-20		
500	-7	-5	-6	-5	-4	-4	-3	-2	-1	-1	1	5	3	2	-3	-4	-20		
630	-9	-7	-5	-6	-4	-4	-4	-1	-0	-1	1	6	3	2	-3	-6	-21		
800	-8	-6	-3	-2	-5	-2	-2	-0	2	2	2	4	-1	-1	-3	-7	-19		
1000	-6	-6	-5	-4	-4	-3	-4	-1	0	1	3	5	-2	1	-3	-4	-8		
1250	-4	-6	2	7	5	-5	-0	-7	-6	1	-2	-0	-3	0	-2	-0	-2		
1600	1	-3	-1	3	1	-0	-1	-1	-1	0	4	3	-2	-3	-6	-5	-12		
2000	-3	-7	-6	-3	-5	-4	-3	-1	-2	-0	3	7	-2	-5	-6	-9	-15		
2500	-0	-3	-4	-3	-1	-4	-2	-1	-4	-4	1	8	-4	-7	-6	-7	-13		
3150	-2	-5	-3	-3	-4	-3	-4	-3	-5	-6	1	9	-5	-5	-5	-8	-16		
4000	0	-5	-1	-0	-2	-5	-4	-5	-3	-4	2	8	-1	-1	-2	-6	-15		
5000	2	-2	1	-0	-1	-3	-2	-3	-1	-2	2	6	-1	-1	-4	-7	-16		
6300	4	-1	1	1	1	-2	-2	-3	-1	-2	3	5	-2	-3	-4	-6	-14		
8000	5	0	2	2	2	0	-1	-1	-2	-3	3	4	-3	-3	-5	-6			
10000	6	2	3	2	1	0	1	-0	-1	-3	2	3	-3	-3	-5	-6			
OCTAVE																			
31.5	-5	-5	-3	-3	-3	-1	-0	2	1	-1	-0	-1		2	4	2	1		
63	-3	-4	-5	-5	-3	-2	-0	1	0	-1	-1	1	-4	3	4	2	-6		
125	-2	-3	-3	-2	-1	-3	-2	1	0	-1	-0	1	-4	4	4	0			
250	-5	-7	-5	-6	-5	-4	-4	-1	0	0	2	4	-1	3	3	-1			
500	-7	-7	-5	-5	-4	-4	-3	-1	-0	-0	1	5	2	3	-3	-4	-20		
1000	-5	-6	-0	4	2	-4	-1	-2	-1	1	1	3	-2	-0	-3	-2	-5		
2000	-0	-4	-3	0	-1	-2	-2	-1	-2	-1	3	6	-2	-5	-6	-7	-13		
4000	0	-4	-1	-1	-2	-4	-4	-4	-3	-4	2	8	-2	-2	-4	-7	-15		
8000	5	0	2	2	1	-1	-1	-2	-1	-2	3	4	-3	-3	-4	-6			
OVERALL	-4	-5	-4	-2	-2	-3	-2	0	0	-0	1	3	-2	3	3	-0	-7		

TABLE: DIRECTIVITY INDEX (DB)

6

IDENTIFICATION:

OMEGA 1.4
TEST 75-002-045
RUN 02
09 MAY 75
PAGE 4

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
50% RPM
FREE FLOW

METEOROLOGY:
TEMP = 26 C
BAR PRESS = .758 M HG
REL HUMID = 85 %

FREQ (HZ)	ANGLE (DEGREES) 0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
1/3 OCTAVE																			
25	-8	-6	-7	-8		-8	-7	-6	-6	-4	-3	0	1	4	5	5	6	5	7
31.5	-7	-3	-5	-7	-6	-7	-6	-5	-5	-3	-4	-1	0	4	5	6	5	5	4
40	-12	-4	-5	-8	-6	-5	-7	-6	-4	-4	-3	-0	1	5	6	5	3	2	1
50	-12	-8	-6	-9	-8	-7	-7	-6	-5	-3	-3	-1	2	5	6	5	-1	-2	-4
63	-9	-8	-9	-9	-8	-7	-7	-7	-5	-5	-3	-0	4	4	7	4	-3	-9	-12
80	-8	-10	-9	-10	-10	-9	-7	-6	-5	-5	-2	-0	3	5	7	4	-4	-18	-16
100	-5	-9	-9	-9	-9	-8	-8	-6	-5	-3	-1	1	3	6	7	1	-7	-16	-19
125	-7	-7	-8	-7	-8	-7	-7	-5	-3	-2	-1	1	3	5	6	-0	-10	-21	-22
160	-5	-6	-5	-4	-7	-7	-5	-4	-3	-2	0	1	2	5	6	-2	-14	-21	
200	-4	-6	-5	-6	-5	-6	-3	-2	-2	-0	0	2	3	4	4	-6			
250	-6	-7	-6	-6	-6	-5	-3	-2	-2	-1	2	4	4	2	2	-8			
315	-8	-8	-7	-6	-5	-6	-5	-3	-3	-1	2	3	6	3	-1	-10	-24		
400	-8	-8	-6	-5	-5	-7	-5	-3	-2	-0	2	4	5	3	-1	-12	-28		
500	-9	-8	-6	-5	-4	-6	-4	-3	-2	-1	1	5	6	-1	-4	-17	-32	-33	
630	-12	-9	-8	-6	-4	-7	-3	-3	-1	0	2	5	5	-1	-6	-19	-31	-32	-32
800	-12	-9	-7	-7	-6	-6	-5	-3	-2	1	4	6	4	-2	-8	-19	-33	-35	-34
1000	-12	-9	-9	-7	-6	-7	-4	-4	-1	1	5	6	2	-4	-9	-19	-31	-34	-32
1250	-10	-9	-9	-8	-7	-8	-7	-5	-3	-1	5	7	2	-5	-10	-18	-29	-34	-33
1600	-6	-8	-9	-5	-5	-3	-4	-4	-2	-1	4	7	3	-5	-10	-18	-28	-34	-32
2000	-1	-5	-7	-5	-3	-2	-2	-2	1	1	6	3	-0	-5	-10	-14	-25	-31	-30
2500	5	1	-1	1	2	-1	-3	-5	-1	-1	6	3	-1	-4	-9	-9	-19	-25	-25
3150	2	-2	-3	1	-0	-2	-1	-2	0	-1	6	3	-2	-7	-12	-16	-22	-28	-27
4000	-2	-3	-2	-0	-2	-4	-3	-5	-4	-1	5	6	-0	-7	-11	-18	-22	-28	-28
5000	1	-1	1	1	-0	-4	-2	-4	-5	-2	4	6	0	-6	-10	-17	-21	-28	-28
6300	-4	-5	-6	-5	-5	-7	-6	-6	-3	2	6	5	-2	-8	-14	-21	-27	-32	-31
8000	-8	-9	-9	-8	-7	-10	-8	-10	-5	-1	7	6	0	-4	-11	-22	-28	-33	-33
10000	-0	-1	-2	0	-1	-1	-3	-5	-4	-2	5	5	1	-3	-7	-16	-21	-27	-28
OCTAVE																			
31.5	-10	-4	-5	-7	-7	-6	-7	-6	-5	-4	-3	-0	1	4	6	5	4	4	4
63	-9	-9	-8	-9	-9	-8	-7	-6	-5	-4	-3	-0	3	5	7	4	-3	-8	-10
125	-5	-8	-8	-7	-8	-8	-7	-5	-4	-2	-1	1	3	5	7	0	-8	-17	-21
250	-6	-7	-6	-6	-5	-5	-4	-3	-2	-1	2	3	5	3	2	-8			
500	-10	-8	-7	-5	-5	-6	-4	-3	-2	-0	2	5	5	1	-3	-15	-30	-34	
1000	-11	-9	-8	-7	-6	-7	-5	-3	-2	0	4	6	3	-3	-9	-19	-31	-35	-33
2000	0	-4	-6	-3	-2	-2	-3	-4	-1	-0	5	5	1	-5	-10	-13	-23	-30	-29
4000	1	-2	-1	0	-1	-3	-2	-4	-3	-1	5	5	-0	-6	-11	-17	-22	-28	-27
8000	-5	-7	-7	-6	-6	-8	-7	-8	-4	0	7	6	-0	-5	-12	-21	-27	-32	-32
OVERALL	-6	-7	-7	-6	-6	-7	-5	-4	-3	-1	2	3	3	3	4	-1	-7	-9	-10

TABLE: DIRECTIVITY INDEX (DB)

6

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
MILITARY POWER
100% RPM
FREE FLOW

METEOROLOGY:
TEMP = 26 C
BAR PRESS = .758 M HG
REL HUMID = 85 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-082-045
RUN 03
09 MAY 75
PAGE 4

FREQ (HZ)	ANGLE (DEGREES) 0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
1/3 OCTAVE																			
25	-15	-12	-14	-13	-11	-11	-8	-8	-7	-6	-4	-2	-0	4	6	7	6	-7	-6
31.5	-14	-14	-12	-13	-12	-11	-9	-9	-7	-6	-4	-3	2	5	6	7	5	-8	-11
40	-14	-16	-15	-15	-13	-11	-11	-10	-10	-9	-6	-2	3	5	7	6	2	-14	-15
50	-18	-17	-17	-17	-14	-15	-12	-11	-11	-9	-5	-2	3	6	7	5	1	-22	-22
63	-19	-18	-19	-16	-14	-16	-15	-13	-11	-9	-7	-2	4	5	8	5	-3	-28	-29
80	-18	-19	-18	-15	-16	-15	-14	-12	-10	-8	-6	-3	4	6	8	4	-5	-32	-31
100	-18	-18	-17	-15	-16	-15	-14	-13	-11	-8	-7	-3	4	8	8	1	-11	-33	
125	-18	-18	-19	-15	-17	-15	-14	-13	-11	-9	-7	-4	2	8	7	-0	-16	-35	
160	-18	-19	-17	-15	-16	-15	-13	-12	-9	-8	-7	-5	1	9	7	-1	-18	-38	-41
200	-15	-16	-14	-15	-14	-13	-13	-10	-9	-7	-6	-3	1	9	7	-3	-15	-39	
250	-12	-15	-13	-14	-14	-11	-11	-8	-8	-5	-4	-1	2	7	8	-2	-12	-38	-39
315	-12	-14	-11	-12	-11	-10	-10	-9	-7	-5	-3	-0	4	7	7	-3	-13	-35	-38
400	-16	-13	-11	-12	-11	-11	-9	-8	-6	-4	-2	1	5	7	5	-6	-15	-38	-41
500	-18	-13	-11	-10	-8	-8	-7	-5	-4	-2	-1	2	5	6	4	-12	-20	-41	-45
630	-11	-12	-11	-10	-8	-7	-5	-2	-2	-0	-0	2	5	6	1	-15	-22	-43	-45
800	-12	-12	-10	-10	-7	-8	-6	-6	-3	-1	2	4	5	4	2	-12	-23	-43	-46
1000	-12	-12	-11	-10	-9	-7	-5	-3	-1	0	2	3	4	5	-2	-14	-24	-44	-48
1250	-17	-11	-10	-11	-10	-9	-8	-6	-3	-1	3	4	5	3	-2	-14	-24	-44	-48
1600	-13	-11	-11	-10	-8	-4	-3	-4	0	3	2	3	4	2	-4	-16	-25	-43	-47
2000	-16	-12	-11	-9	-8	-4	-3	-5	-1	2	2	3	5	3	-4	-17	-25	-44	-48
2500	-15	-12	-10	-9	-9	-6	-3	-7	0	2	3	3	5	1	-6	-17	-25	-43	-48
3150	-9	-6	-5	-4	-5	-4	-3	-6	0	2	3	4	5	-1	-8	-18	-25	-42	-47
4000	-13	-8	-8	-6	-8	-5	-3	-4	-0	1	3	4	5	-2	-6	-20	-25	-43	-47
5000	-17	-11	-10	-6	-8	-6	-2	-1	1	2	2	4	5	-2	-7	-20	-26	-44	-49
6300	-17	-9	-9	-6	-9	-5	-2	-2	3	2	2	3	4	-3	-9	-19	-27	-45	-49
8000	-21	-13	-11	-9	-10	-7	-2	-4	5	2	1	3	3	-4	-11	-20	-30	-47	
10000	-23	-13	-9	-10	-11	-8	-3	-3	4	1	1	5	4	-3	-11	-22	-31	-48	-51
OCTAVE																			
31.5	-14	-14	-14	-14	-12	-11	-10	-9	-8	-8	-5	-2	2	5	7	6	4	-10	-11
63	-19	-18	-18	-16	-15	-15	-14	-12	-10	-8	-6	-2	4	6	8	5	-3	-27	-27
125	-18	-18	-17	-15	-16	-15	-14	-13	-10	-8	-7	-4	2	9	7	-1	-15	-35	
250	-13	-15	-13	-14	-13	-12	-11	-9	-8	-6	-4	-2	2	8	7	-3	-14	-37	-42
500	-15	-13	-11	-11	-9	-9	-7	-5	-4	-2	-1	2	5	6	4	-9	-18	-40	-43
1000	-13	-12	-10	-10	-8	-8	-6	-5	-2	-0	2	4	5	4	0	-13	-24	-44	-47
2000	-15	-12	-11	-9	-8	-4	-3	-5	-0	2	2	3	5	2	-5	-17	-25	-44	-48
4000	-12	-7	-7	-5	-7	-5	-3	-4	0	1	3	4	5	-1	-7	-19	-25	-43	-48
8000	-20	-12	-10	-8	-10	-7	-2	-3	4	2	1	4	4	-3	-10	-20	-29	-46	-52
OVERALL	-15	-15	-13	-13	-12	-11	-9	-8	-6	-4	-3	-0	3	7	6	-1	-10	-28	-29

FIGURE 5 OVERALL SOUND PRESSURE LEVEL (OASPL) EQUAL LEVEL CONTOURS (DB)

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
IDLE POWER
35% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-045
RUN 01
09 MAY 75
PAGE 13

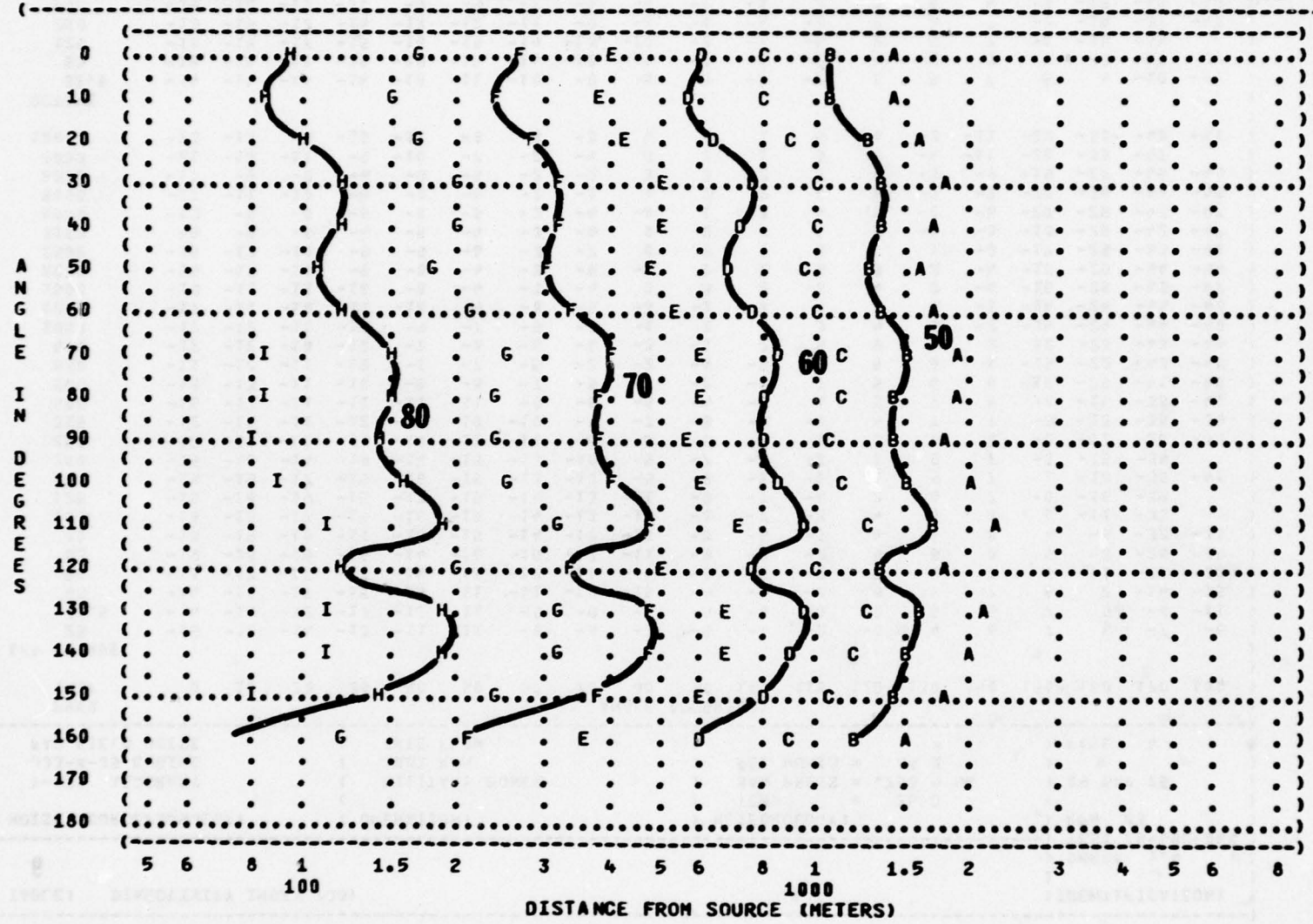


FIGURE 5 OVERALL SOUND PRESSURE LEVEL (OASPL) EQUAL LEVEL CONTOURS (DB)

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-045
RUN 02
09 MAY 75
PAGE 13

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
50% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

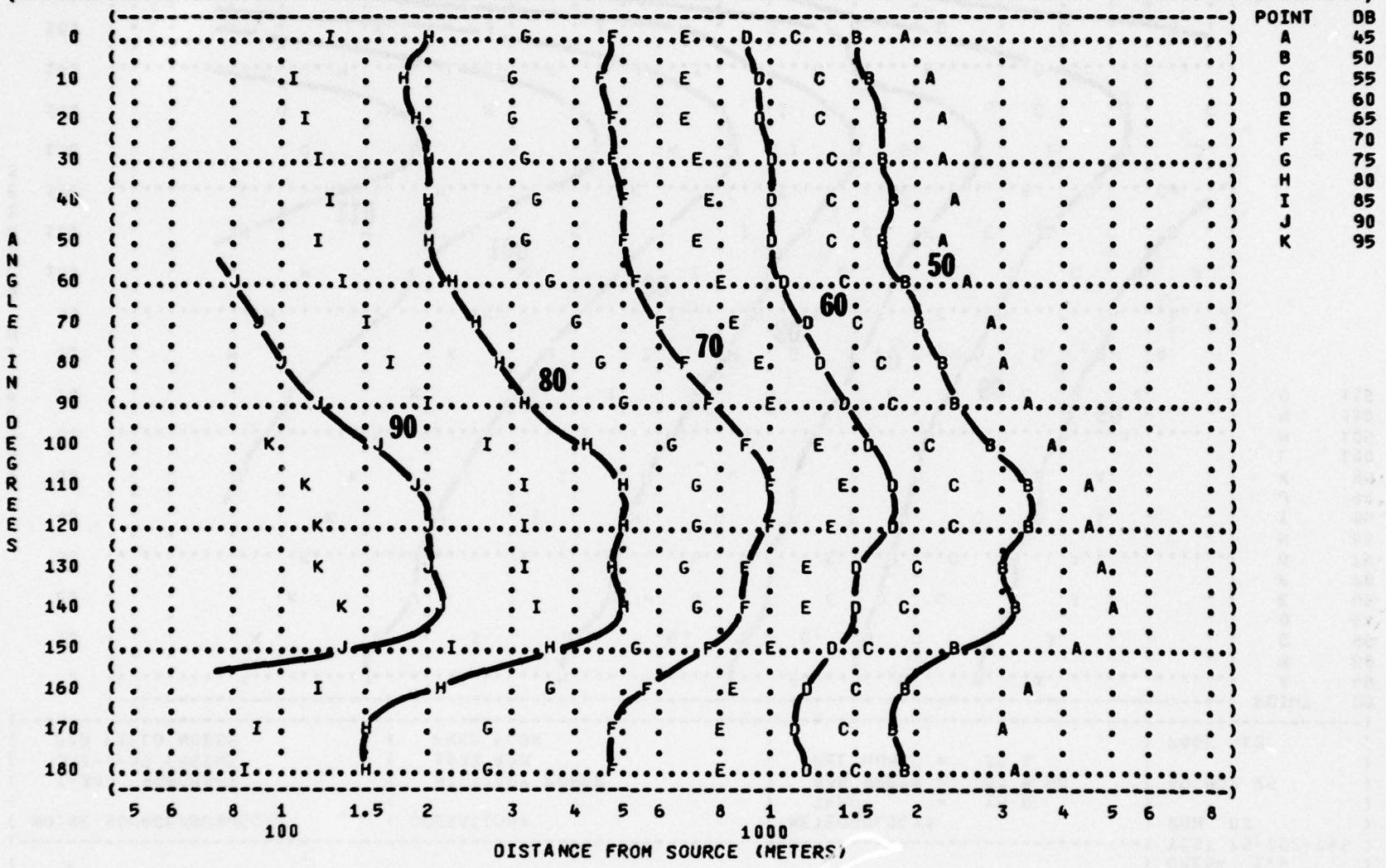


FIGURE 5 OVERALL SOUND PRESSURE LEVEL (OASPL) EQUAL LEVEL CONTOURS (DB)

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
MILITARY POWER
100% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-045
RUN 03
09 MAY 75
PAGE 13

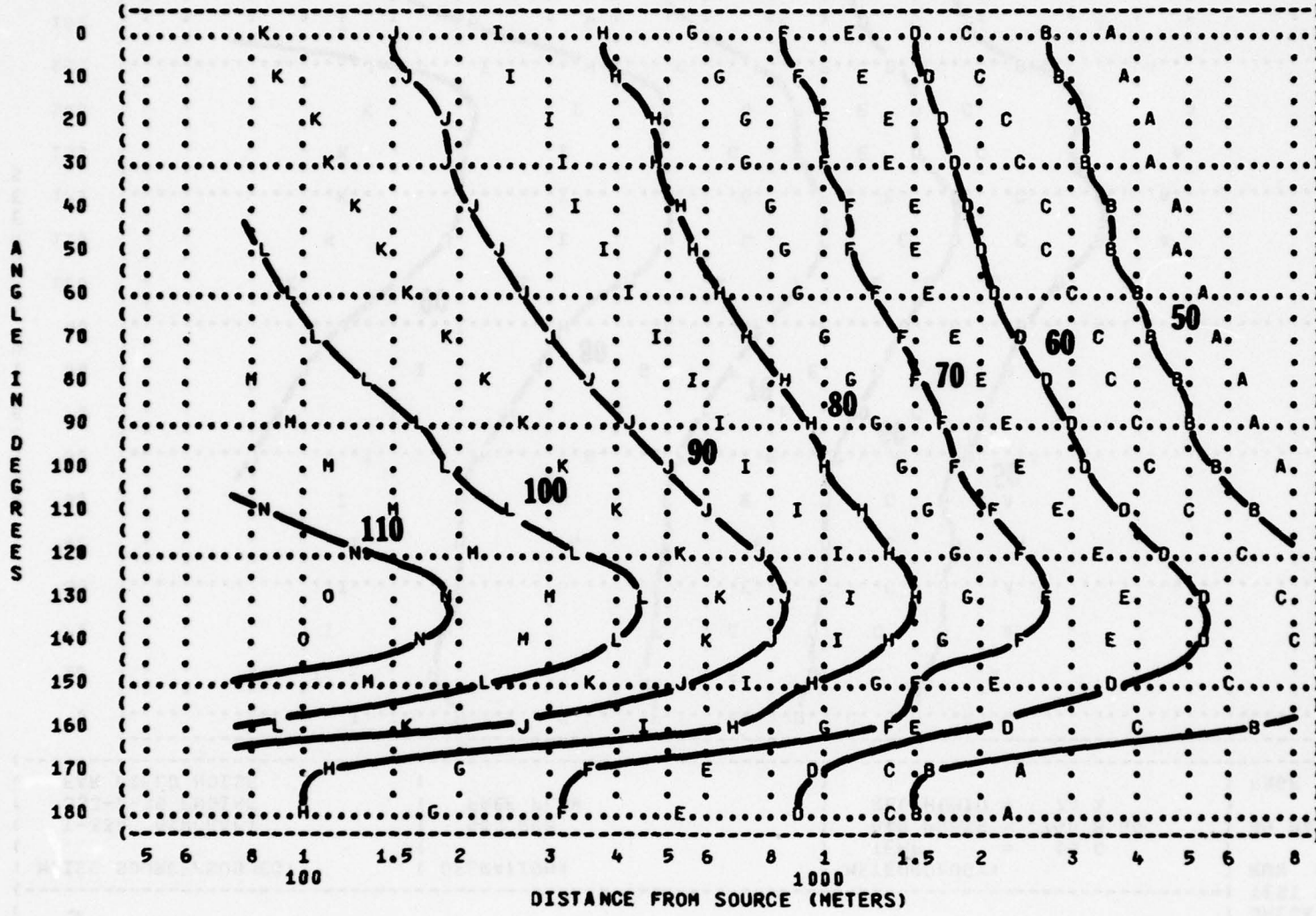


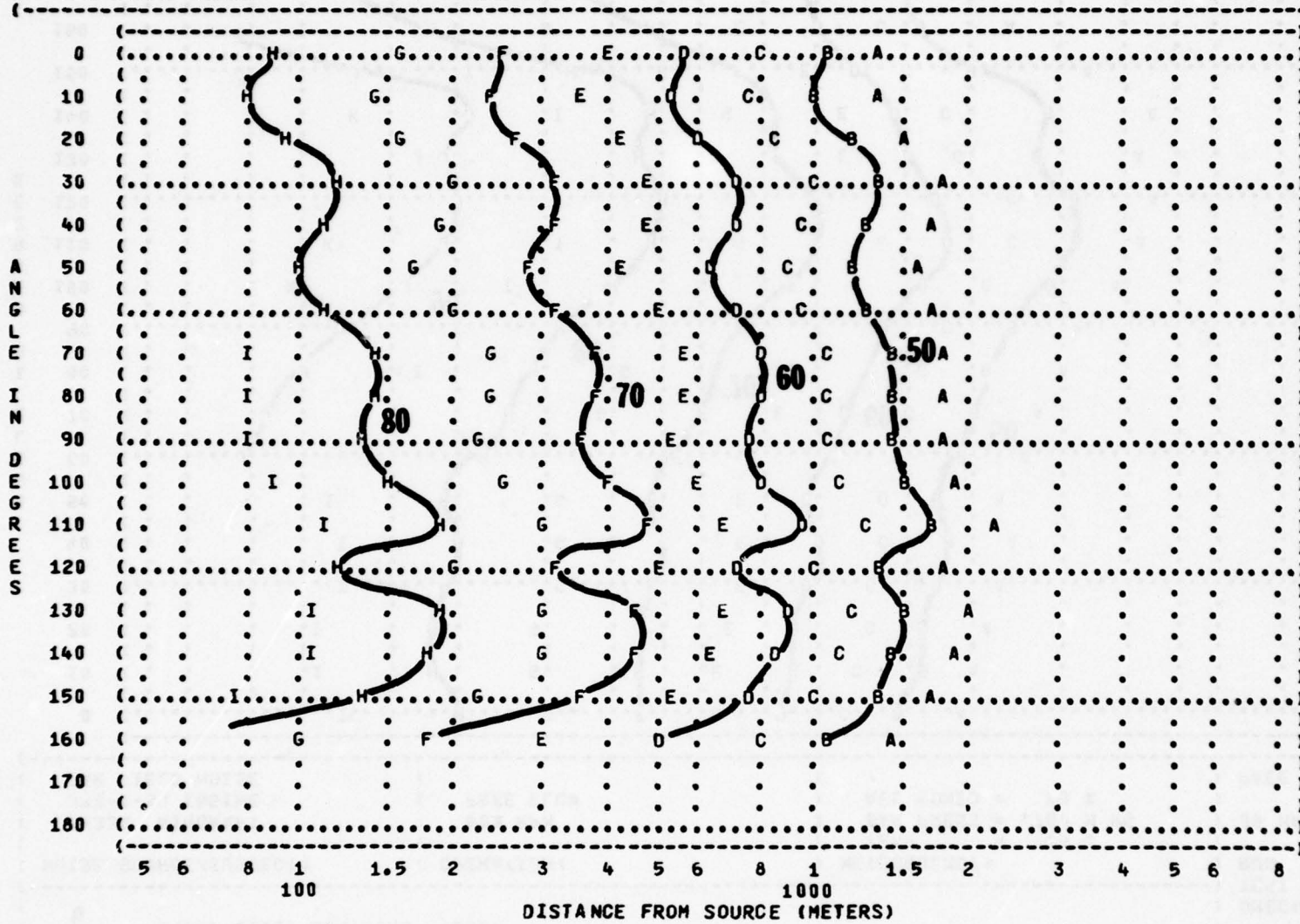
FIGURE: 6 C-WEIGHTED OVERALL SOUND LEVEL (OASLC) EQUAL LEVEL CONTOURS (DBC)

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-145
RUN 01
09 MAY 75
PAGE 14

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
IDLE POWER
35% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %



POINT	DBC
A	45
B	50
C	55
D	60
E	65
F	70
G	75
H	80
I	85

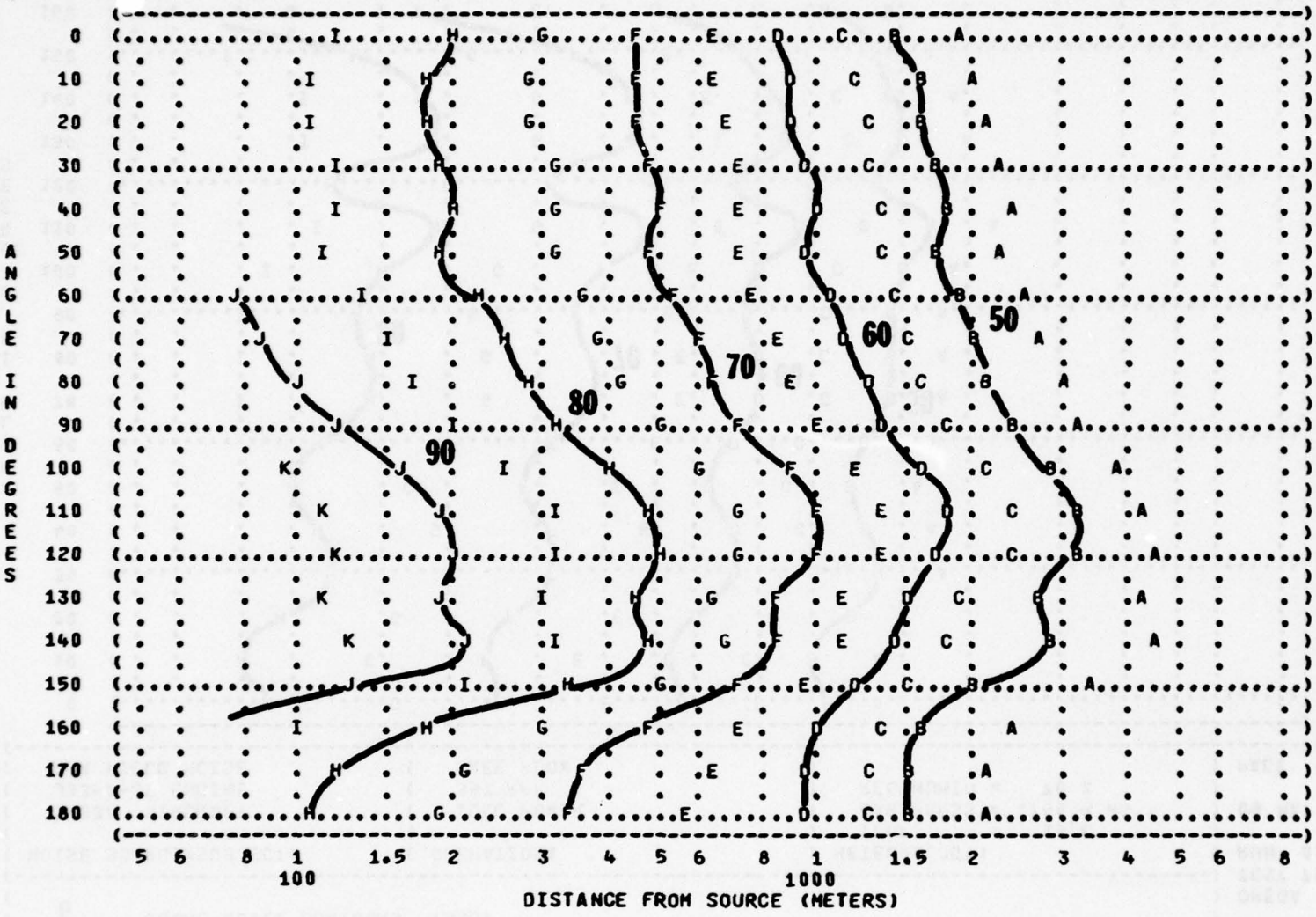
FIGURE: 6 C-WEIGHTED OVERALL SOUND LEVEL (OASLC) EQUAL LEVEL CONTOURS (DBC)

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-045
RUN 02
09 MAY 75
PAGE 14

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
50% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %



POINT	DBC
A	45
B	50
C	55
D	60
E	65
F	70
G	75
H	80
I	85
J	90
K	95

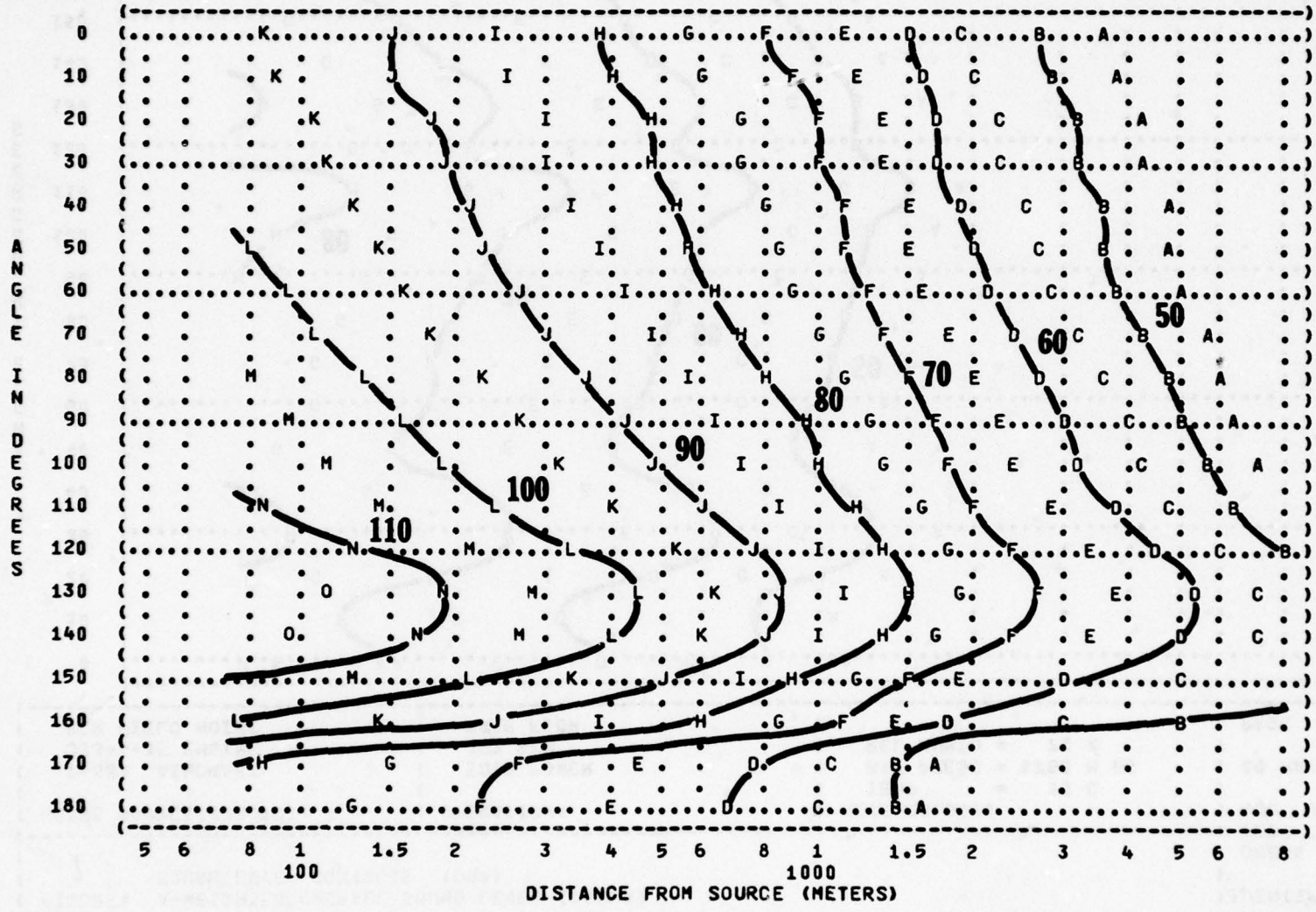
FIGURE: 6 C-WEIGHTED OVERALL SOUND LEVEL (OASLC) EQUAL LEVEL CONTOURS (DBC)

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-045
RUN 03
09 MAY 75
PAGE 14

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
MILITARY POWER
100% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %



POINT	DBC
A	45
B	50
C	55
D	60
E	65
F	70
G	75
H	80
I	85
J	90
K	95
L	100
M	105
N	110
O	115

FIGURE 7: A-WEIGHTED OVERALL SOUND LEVEL (OASLA) EQUAL LEVEL CONTOURS (DBA)

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
IDLE POWER
35% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-045
RUN 01
09 MAY 75
PAGE 15

POINT	DB
A	45
B	50
C	55
D	60
E	65
F	70
G	75
H	80

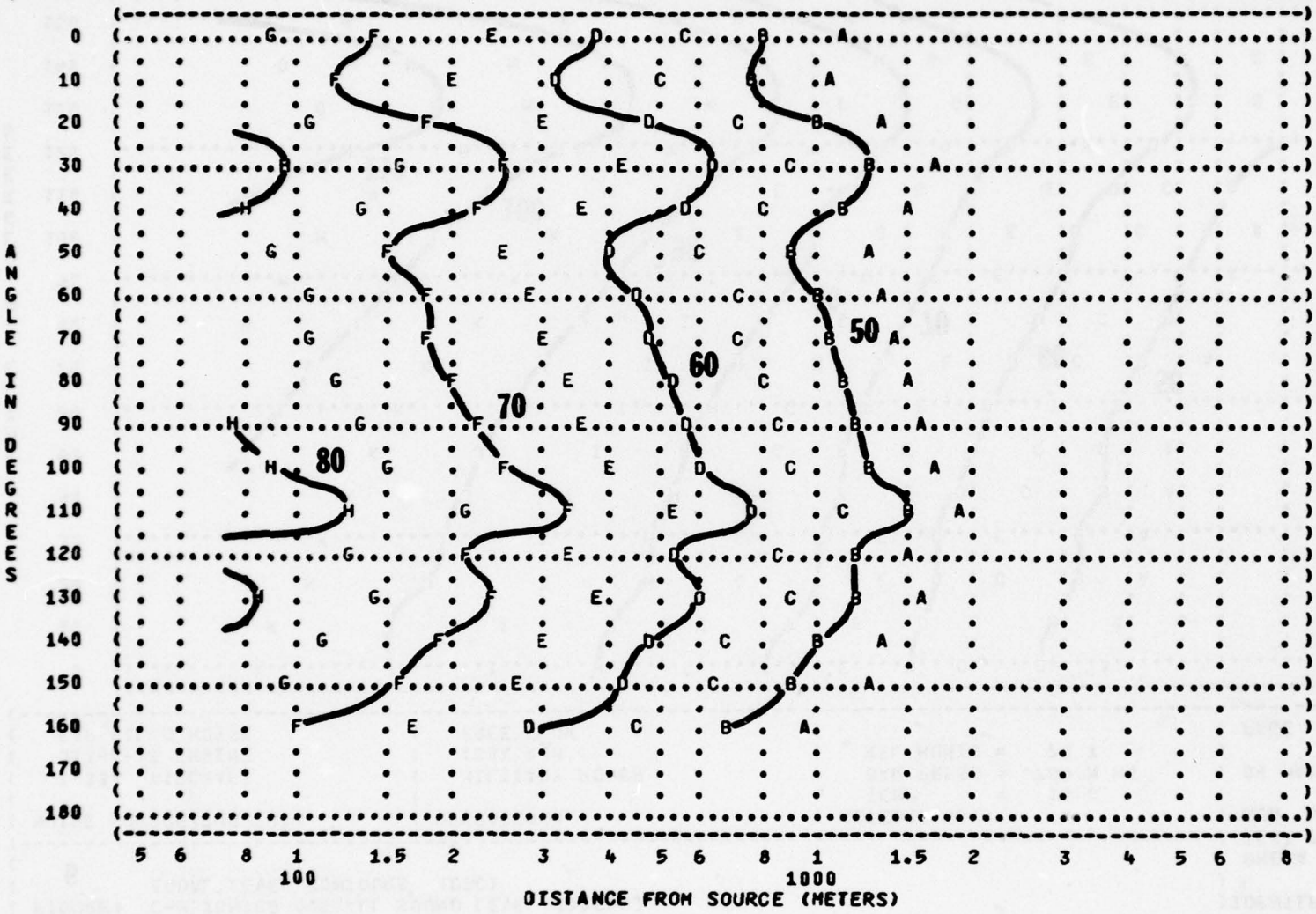


FIGURE 7: A-WEIGHTED OVERALL SOUND LEVEL (OASLA) EQUAL LEVEL CONTOURS (DBA)

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-045
RUN 02
09 MAY 75
PAGE 15

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
50% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

POINT	DBA
A	45
B	50
C	55
D	60
E	65
F	70
G	75
H	80
I	85
J	90
K	95

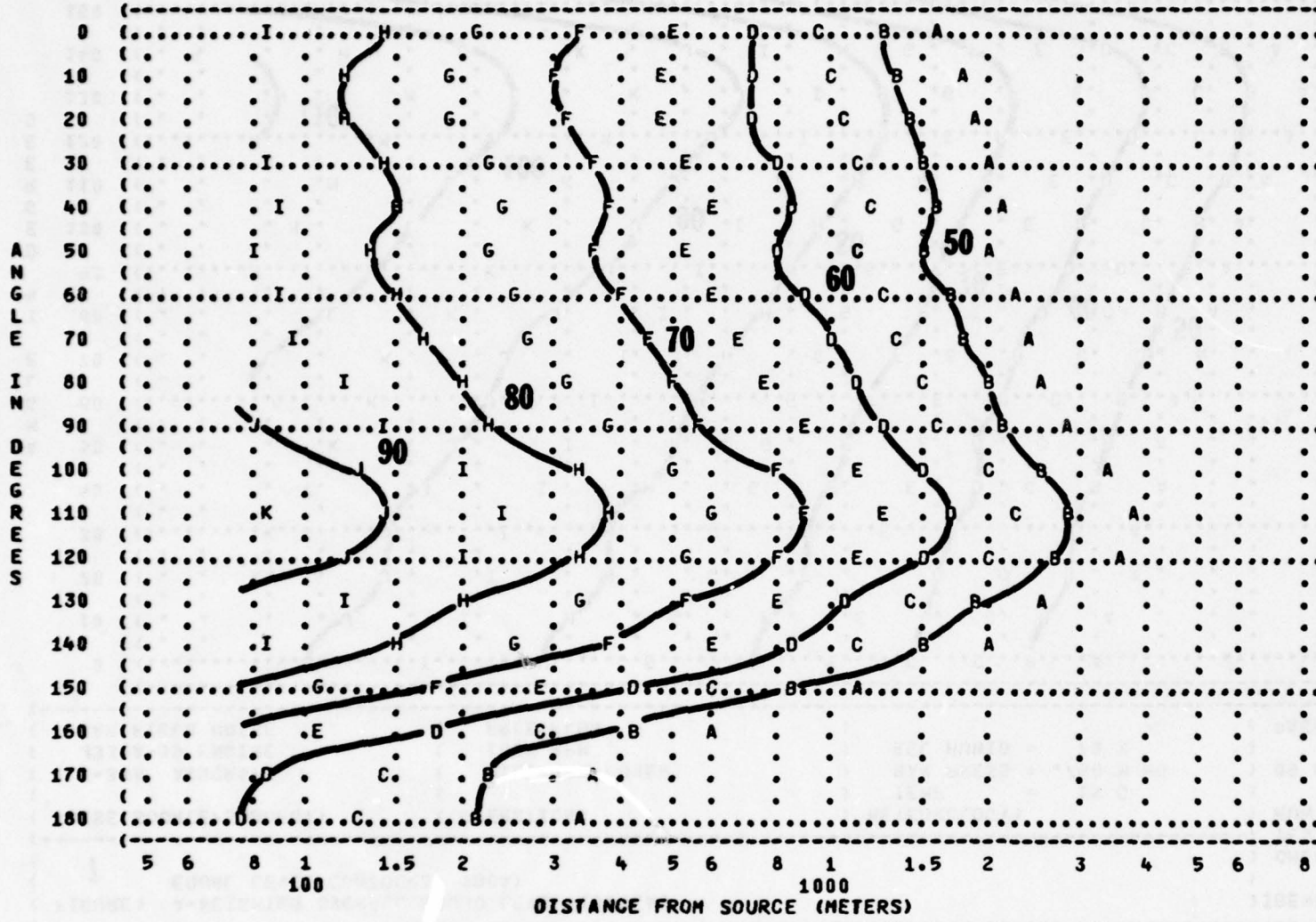


FIGURE 7: A-WEIGHTED OVERALL SOUND LEVEL (OASLA) EQUAL LEVEL CONTOURS (DBA)

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-045
RUN 03
09 MAY 75
PAGE 15

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
MILITARY POWER
100% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

POINT	DBA
A	45
B	50
C	55
D	60
E	65
F	70
G	75
H	80
I	85
J	90
K	95
L	100
M	105
N	110

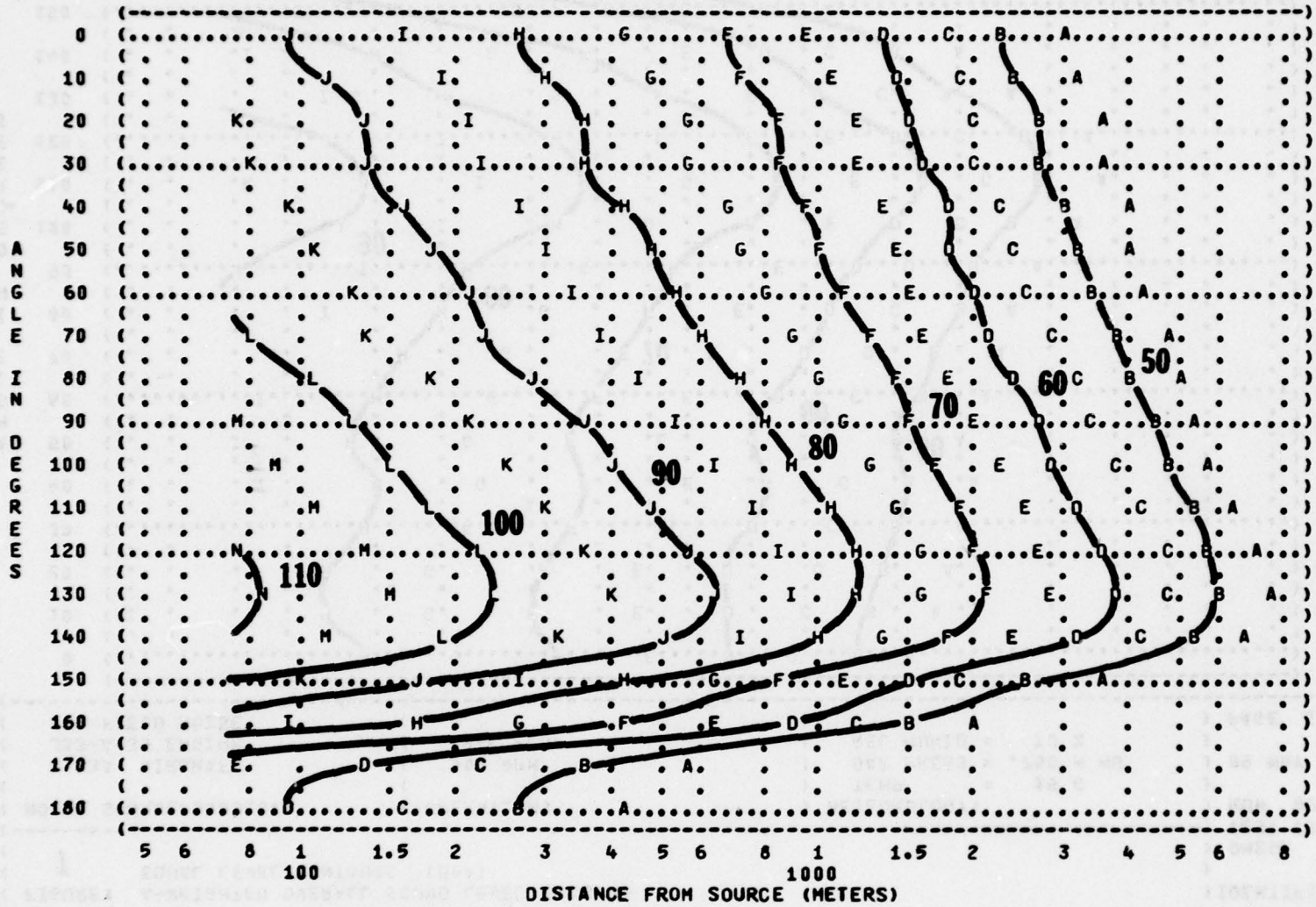


FIGURE 8: PERCEIVED NOISE LEVEL WITH SMOOTH TONE CORRECTION (PNLT) EQUAL LEVEL CONTOURS (PNDB)

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-045
RUN 01
09 MAY 75
PAGE 16

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
IDLE POWER
35% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

POINT	PNDB
A	60
B	65
C	70
D	75
E	80
F	85
G	90
H	95

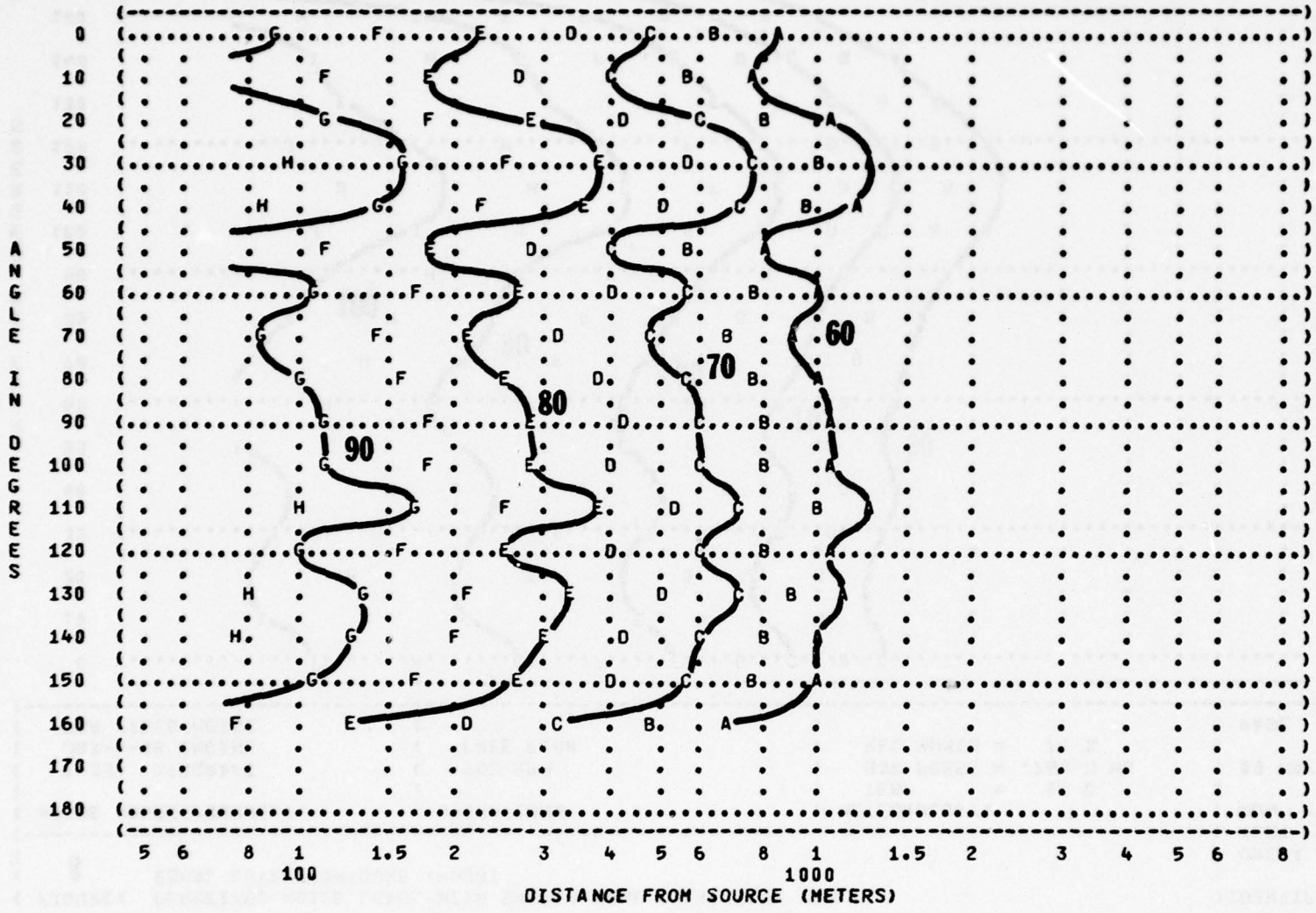


FIGURE 8 PERCEIVED NOISE LEVEL WITH SMOOTH TONE CORRECTION (PNLT) EQUAL LEVEL CONTOURS (PNDB)

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-045
RUN 02
09 MAY 75
PAGE 16

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
50% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

POINT	PNDB
A	60
B	65
C	70
D	75
E	80
F	85
G	90
H	95
I	100
J	105

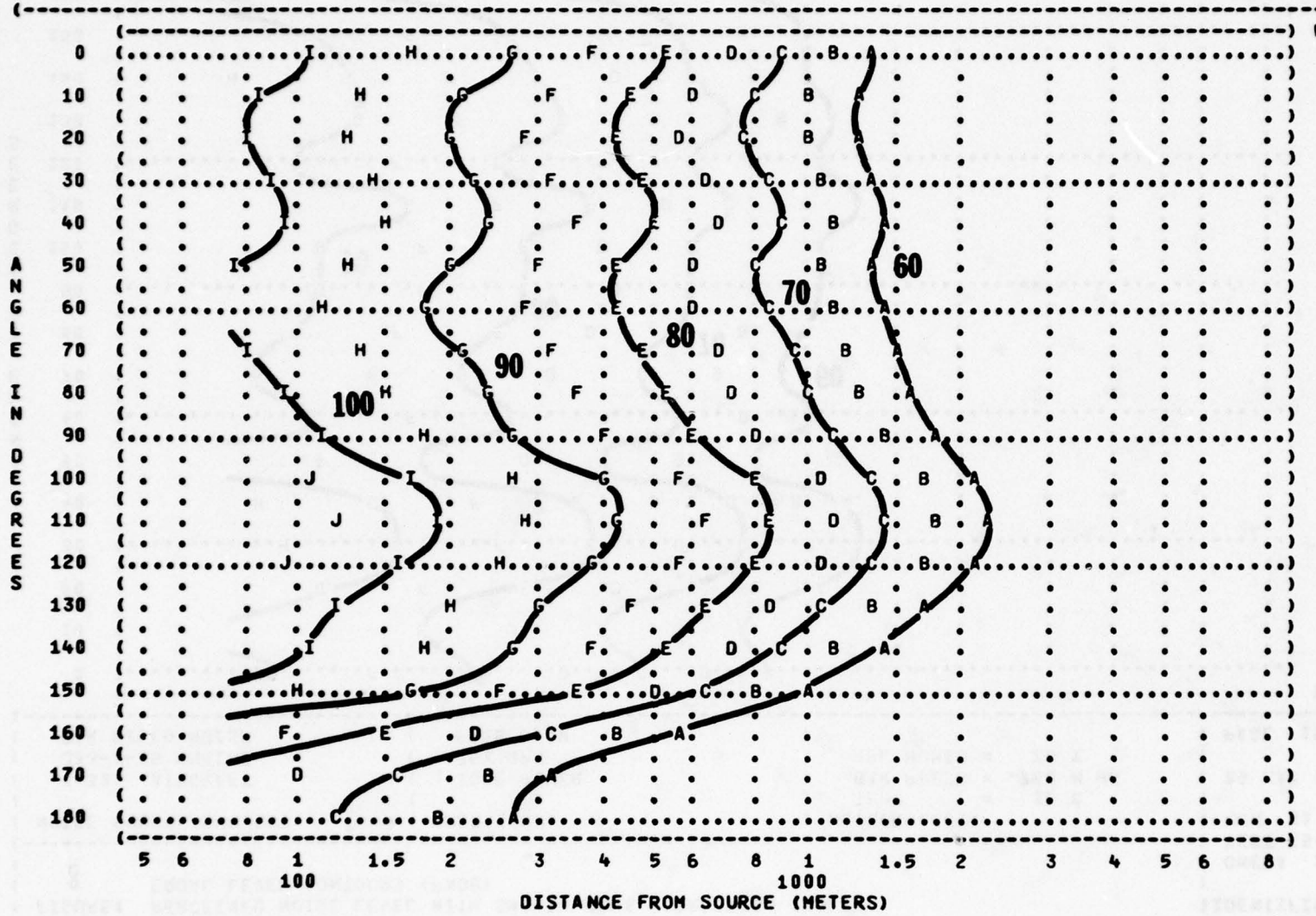


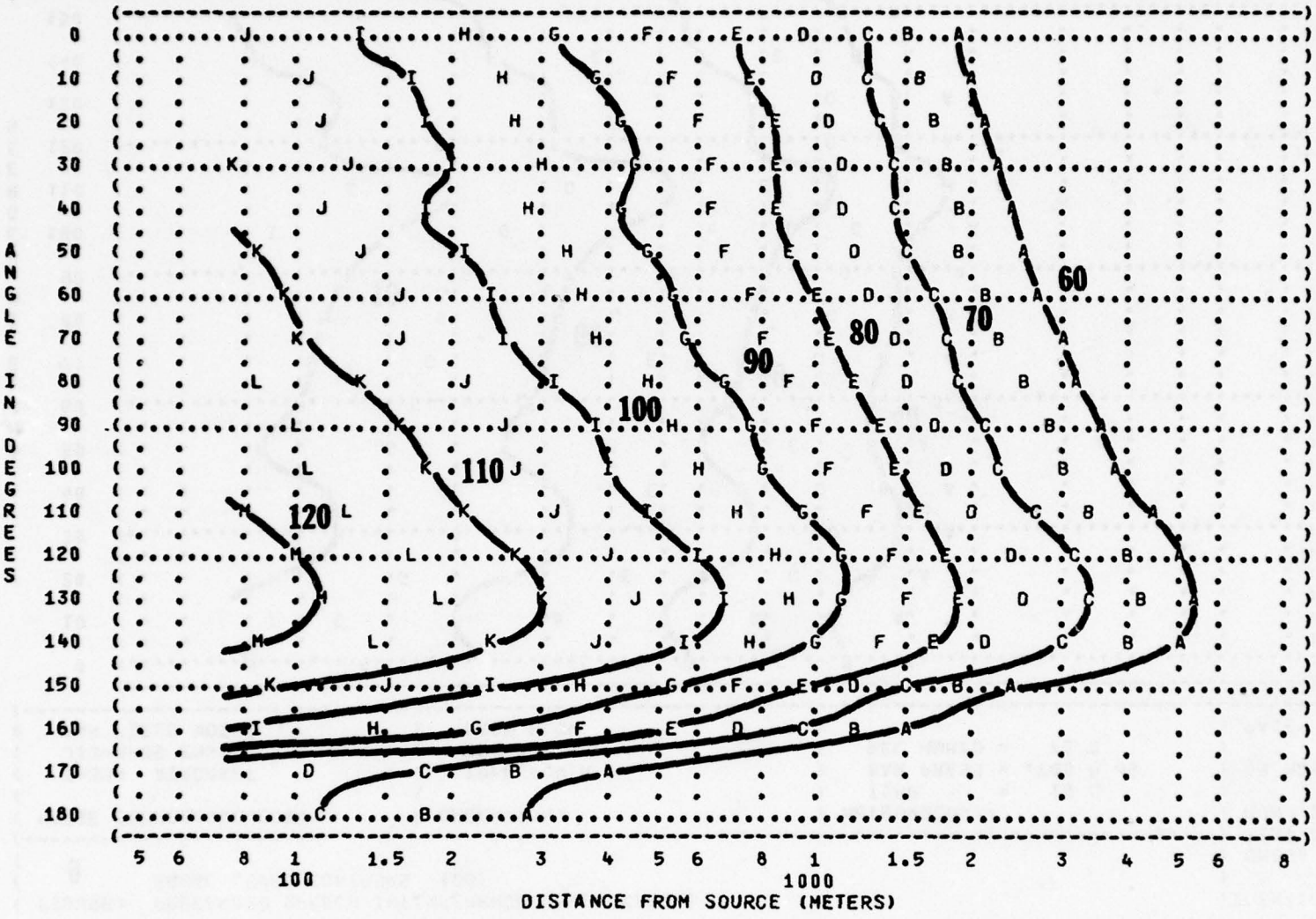
FIGURE 8: PERCEIVED NOISE LEVEL WITH SMOOTH TONE CORRECTION (PNLT) EQUAL LEVEL CONTOURS (PNDB)

IDENTIFICATION: OMEGA 1.4 TEST 75-002-045 RUN 03 09 MAY 75 PAGE 16

NOISE SOURCE/SUBJECT: T-33A AIRCRAFT J33-A-35 ENGINE FAR FIELD NOISE

OPERATION: MILITARY POWER 100% RPM FREE FLOW

METEOROLOGY: TEMP = 15 C BAR PRESS = .760 M HG REL HUMID = 70 %



POINT	PNDB
A	60
B	65
C	70
D	75
E	80
F	85
G	90
H	95
I	100
J	105
K	110
L	115
M	120

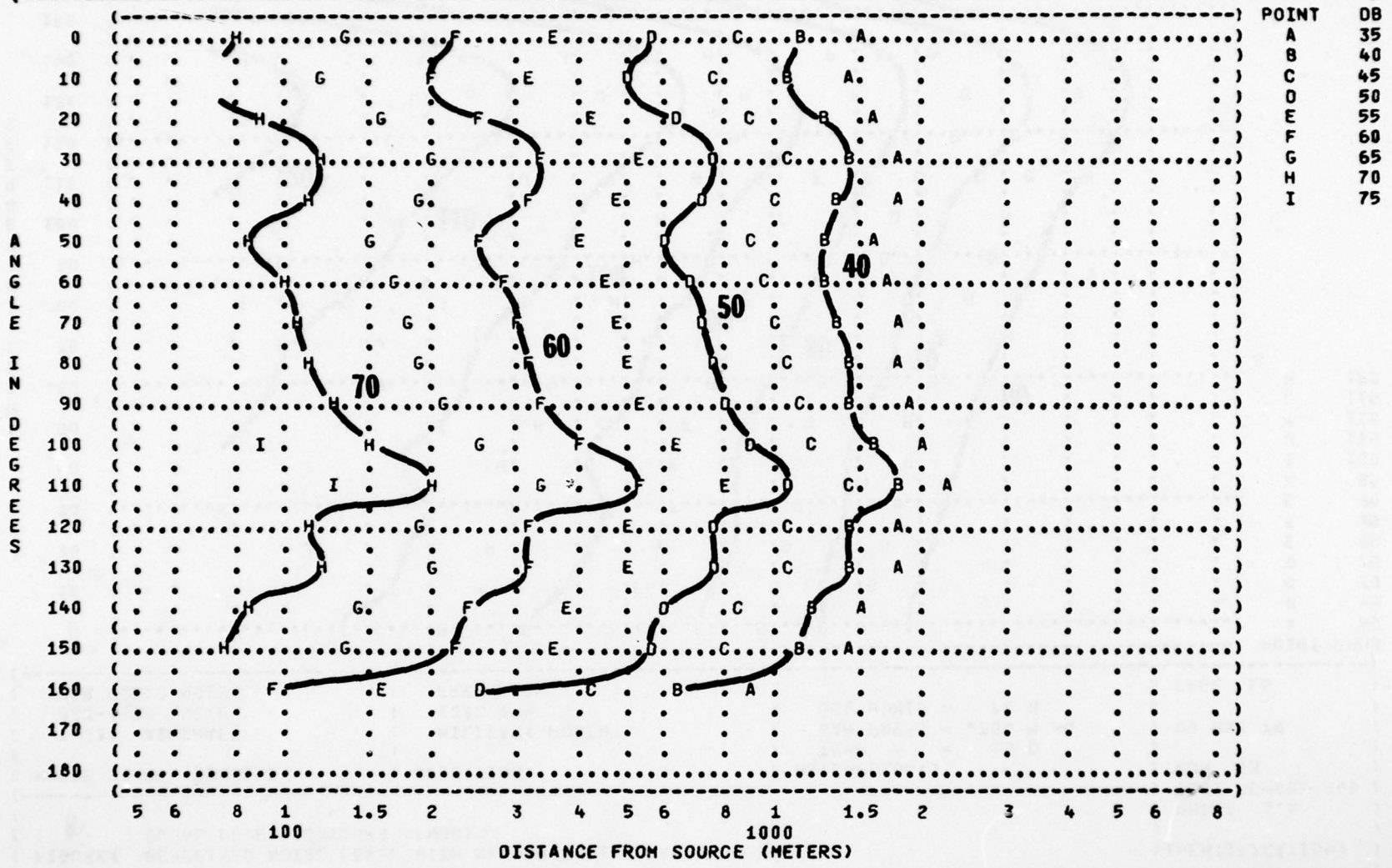
FIGURE 9 PREFERRED SPEECH INTERFERENCE LEVEL (PSIL) EQUAL LEVEL CONTOURS (DB)

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-045
RUN 01
09 MAY 75
PAGE 17

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
IDLE POWER
<35% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %



POINT	DB
A	35
B	40
C	45
D	50
E	55
F	60
G	65
H	70
I	75

FIGURE 9: PREFERRED SPEECH INTERFERENCE LEVEL (PSIL) EQUAL LEVEL CONTOURS (DB)

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-045
RUN 02
09 MAY 75
PAGE 17

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
50% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

POINT	DB
A	35
B	40
C	45
D	50
E	55
F	60
G	65
H	70
I	75
J	80
K	85
L	90

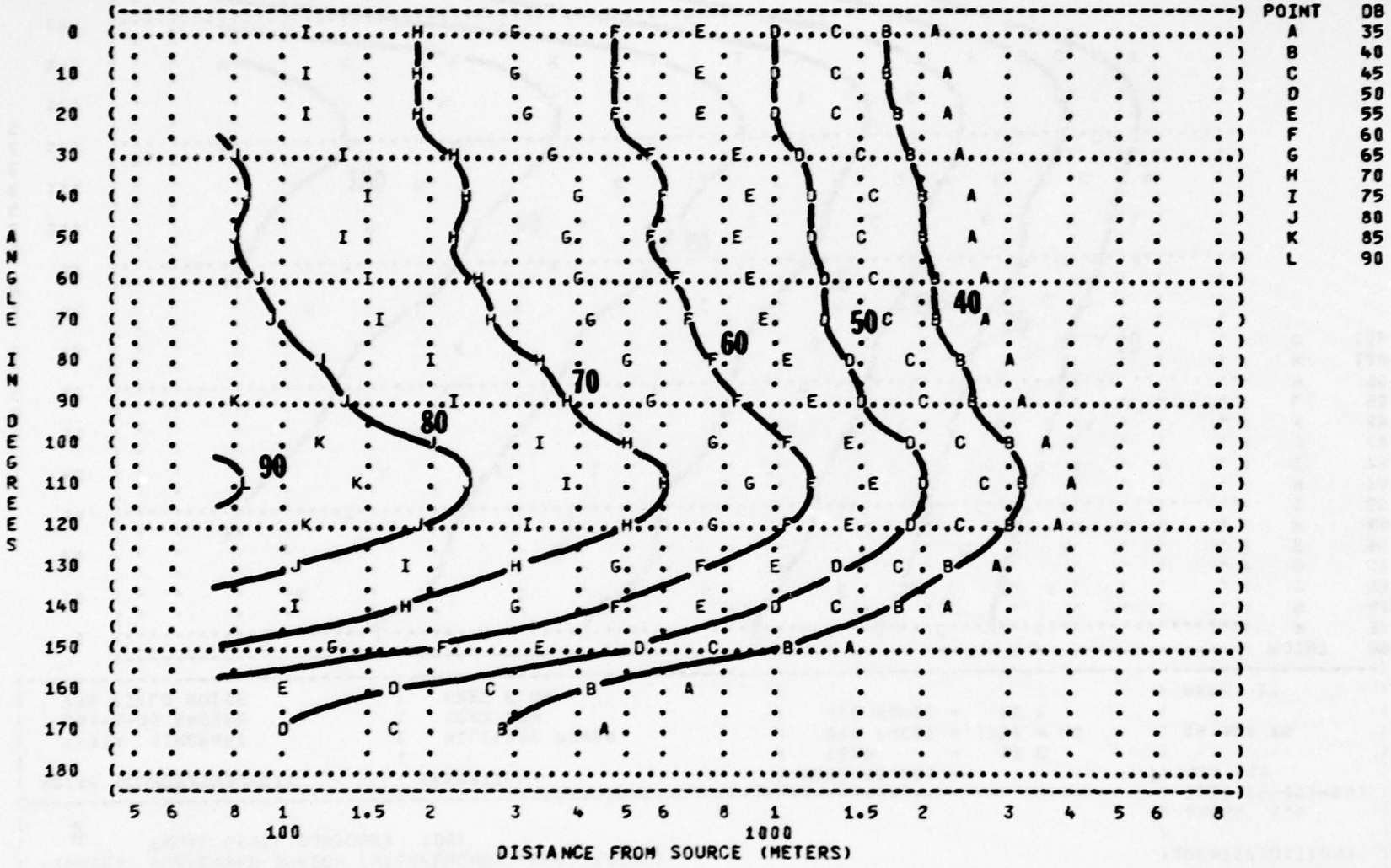


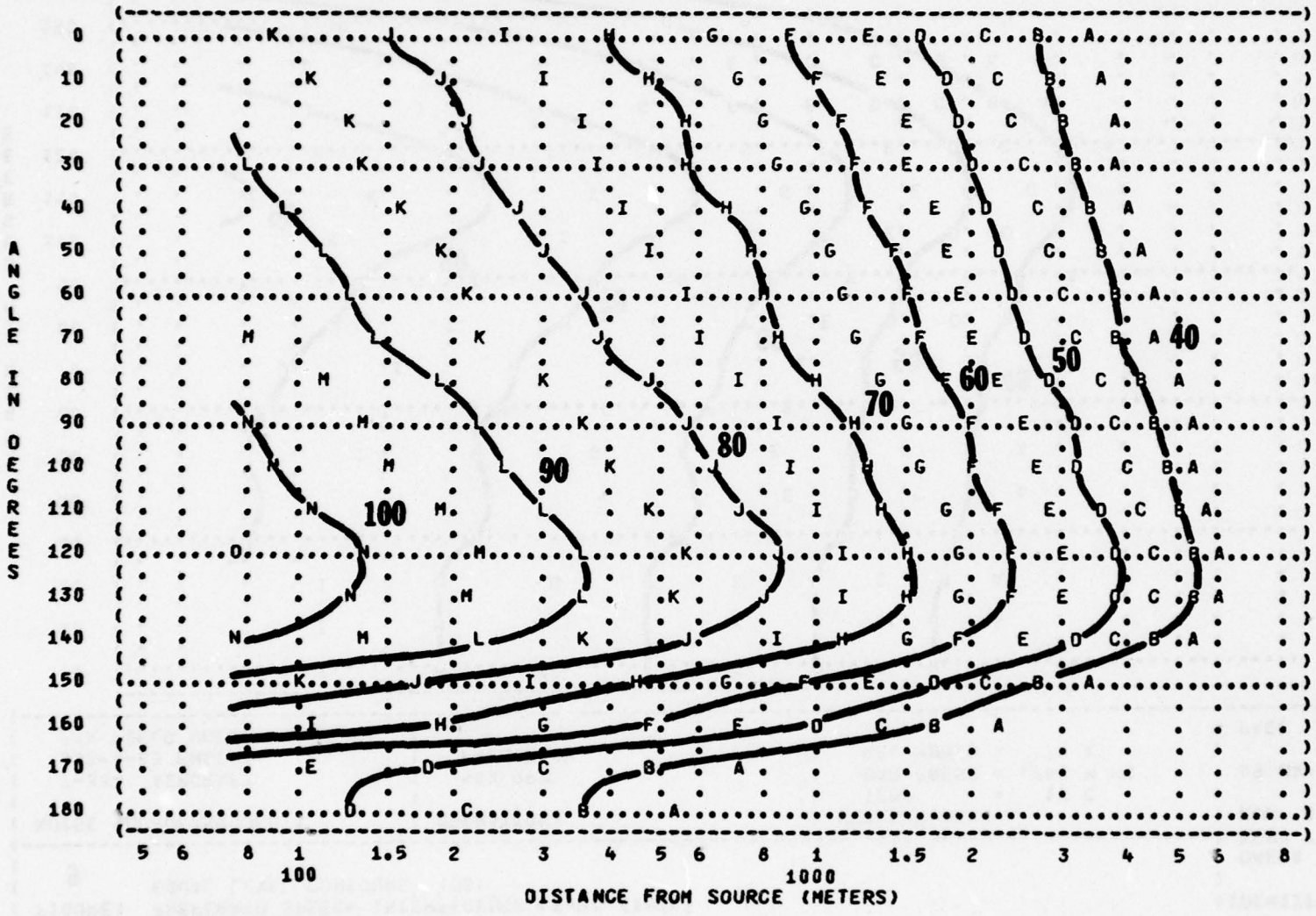
FIGURE 9: PREFERRED SPEECH INTERFERENCE LEVEL (PSIL) EQUAL LEVEL CONTOURS (DB)

IDENTIFICATION: OMEGA 1.4 TEST 75-002-045 RUN 03 09 MAY 75 PAGE 17

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
MILITARY POWER
100% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %



POINT	DB
A	35
B	40
C	45
D	50
E	55
F	60
G	65
H	70
I	75
J	80
K	85
L	90
M	95
N	100
O	105

FIGURE: 10

MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)
EQUAL TIME CONTOURS (MINUTES)
NO PROTECTION

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-045
RUN 01
09 MAY 75
PAGE 7

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
IDLE POWER
35% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

POINT	MIN
A	960
B	480

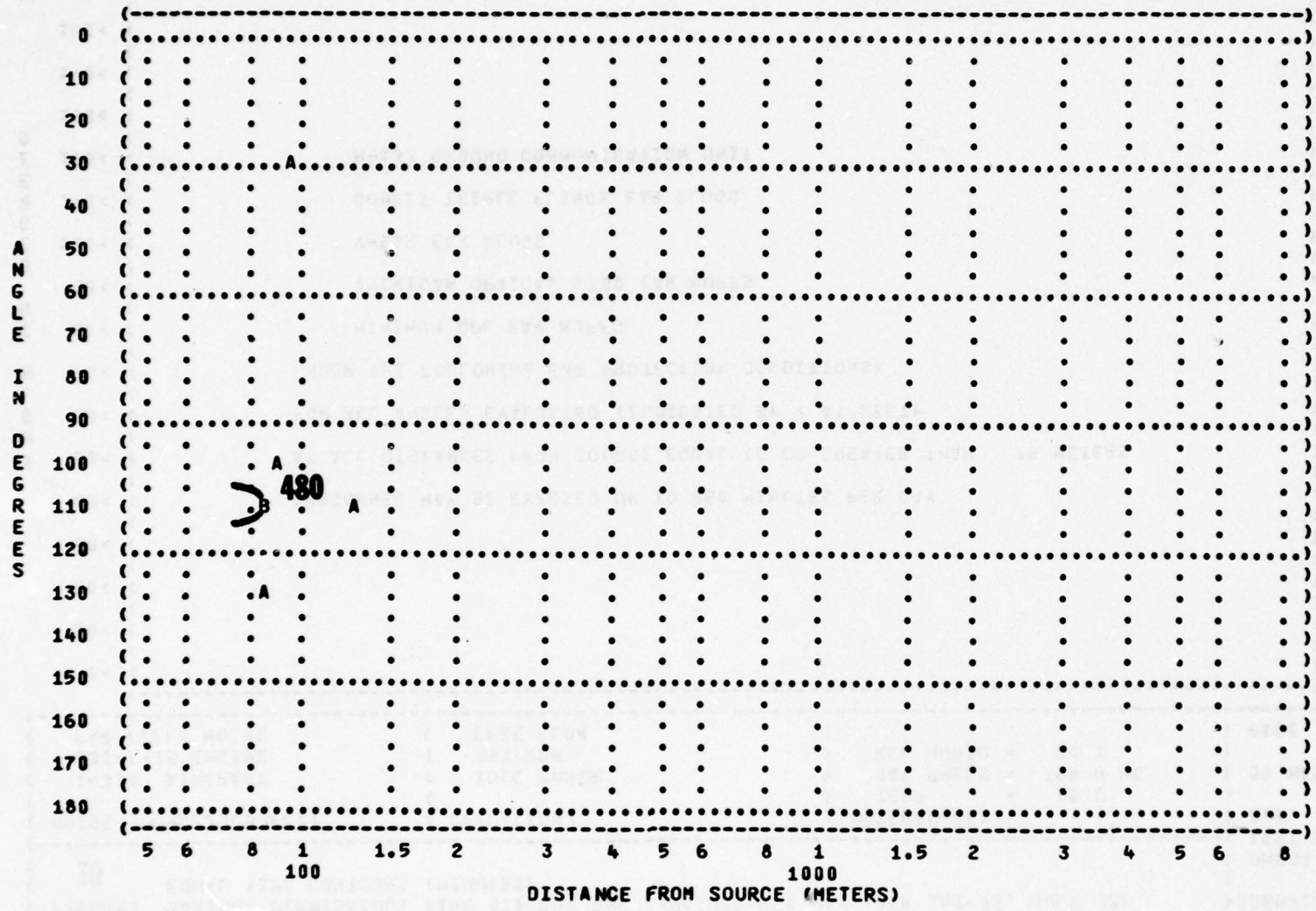


FIGURE: 10 MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)
EQUAL TIME CONTOURS (MINUTES)

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-045
RUN 01
09 MAY 75
PAGE 8

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
IDLE POWER
35% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

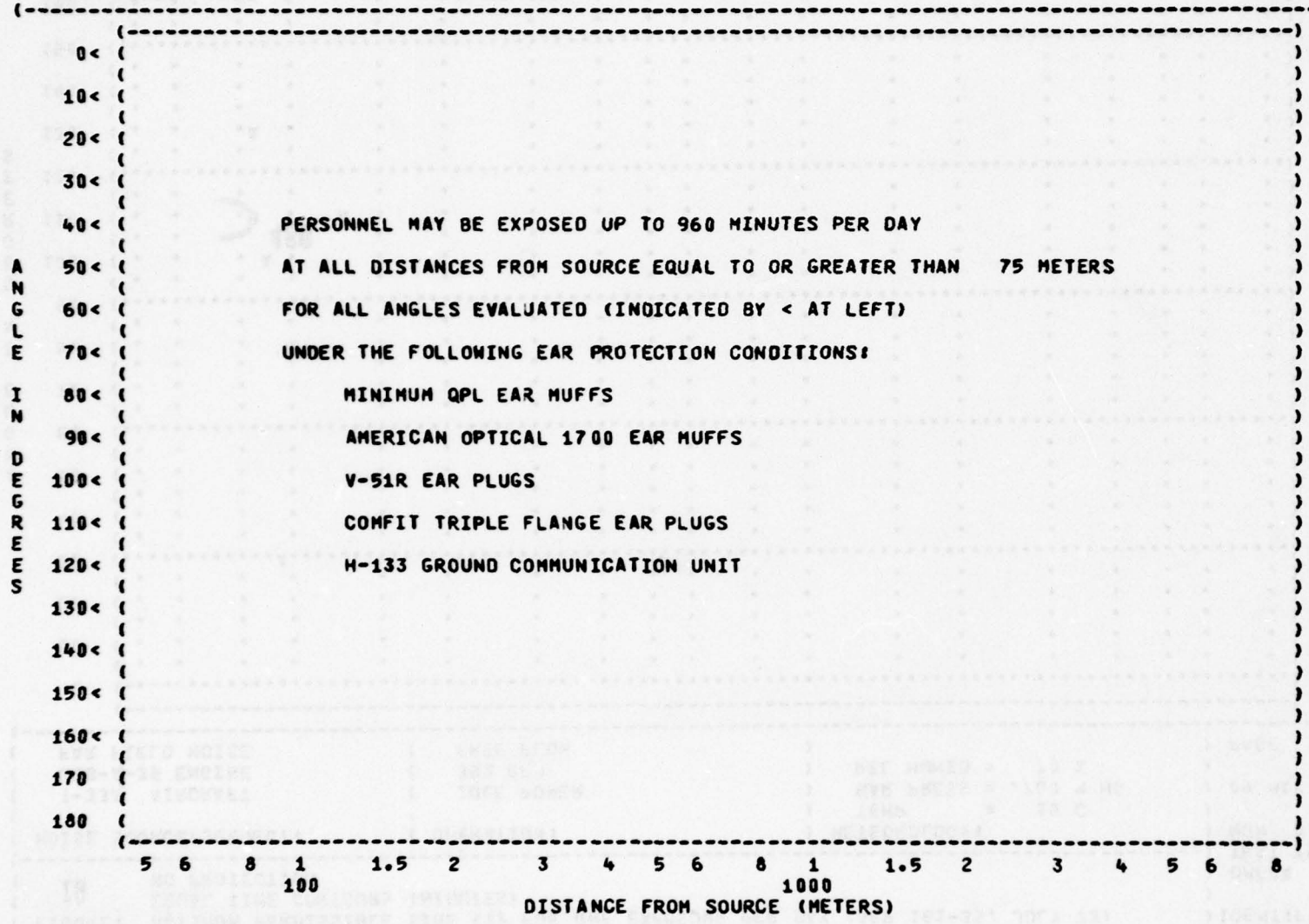


FIGURE 10: MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)
EQUAL TIME CONTOURS (MINUTES)
NO PROTECTION

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
50% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-045
RUN 02
09 MAY 75
PAGE 7

POINT	MIN
A	960
B	480
C	240
D	120
E	60

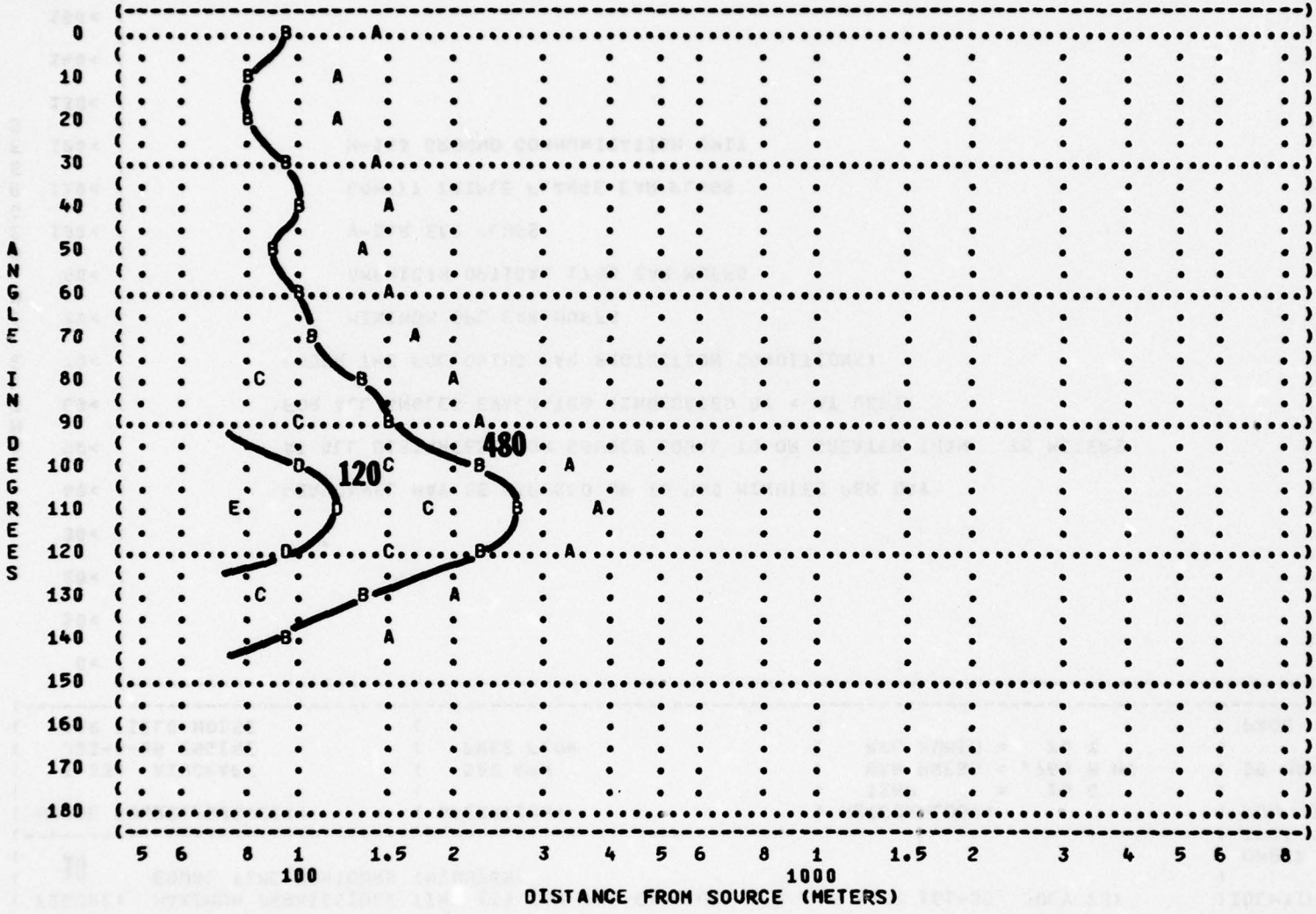


FIGURE: 10 MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)
EQUAL TIME CONTOURS (MINUTES)

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-045
RUN 02
09 MAY 75
PAGE 8

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
50% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

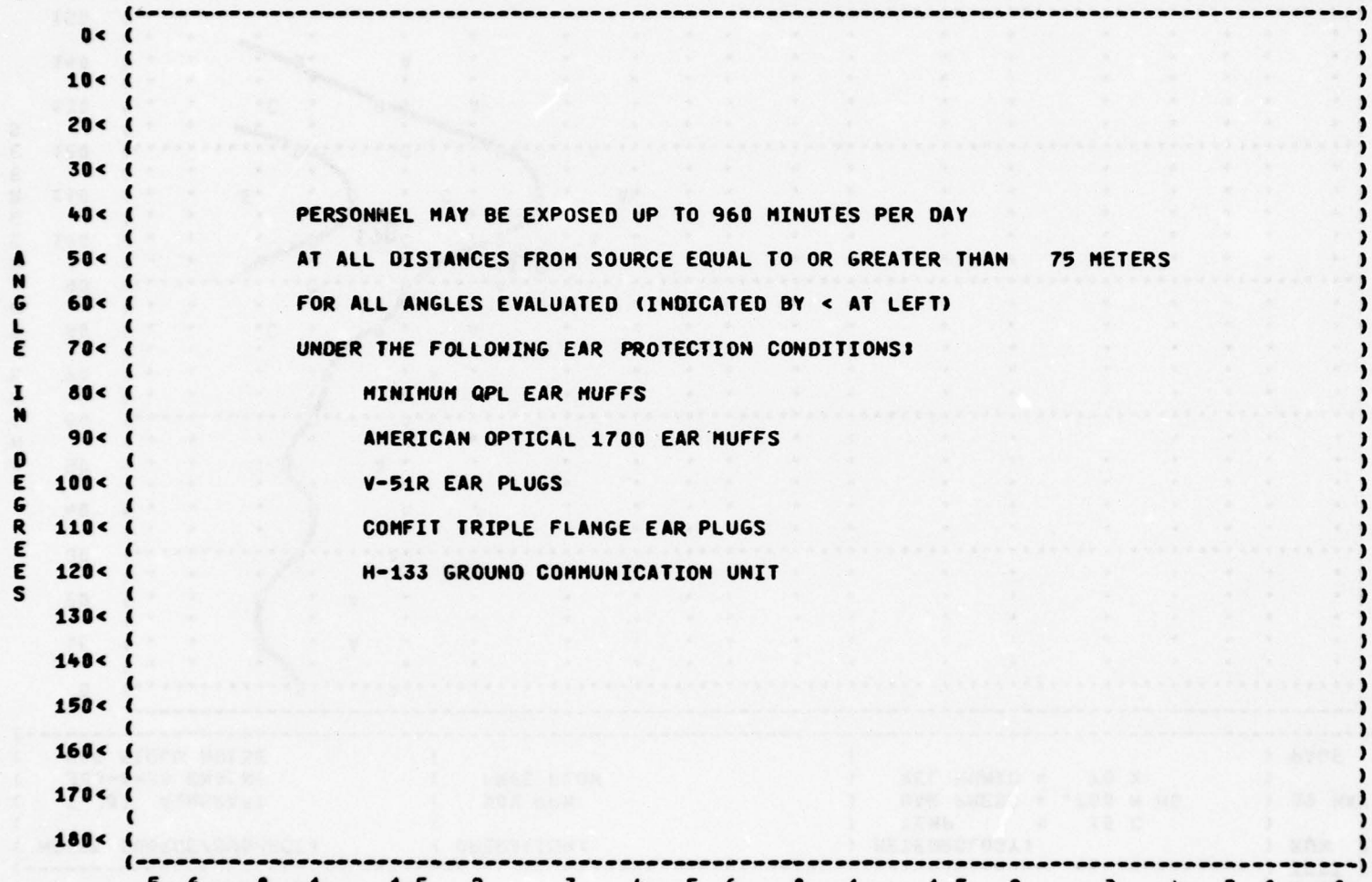


FIGURE: 10

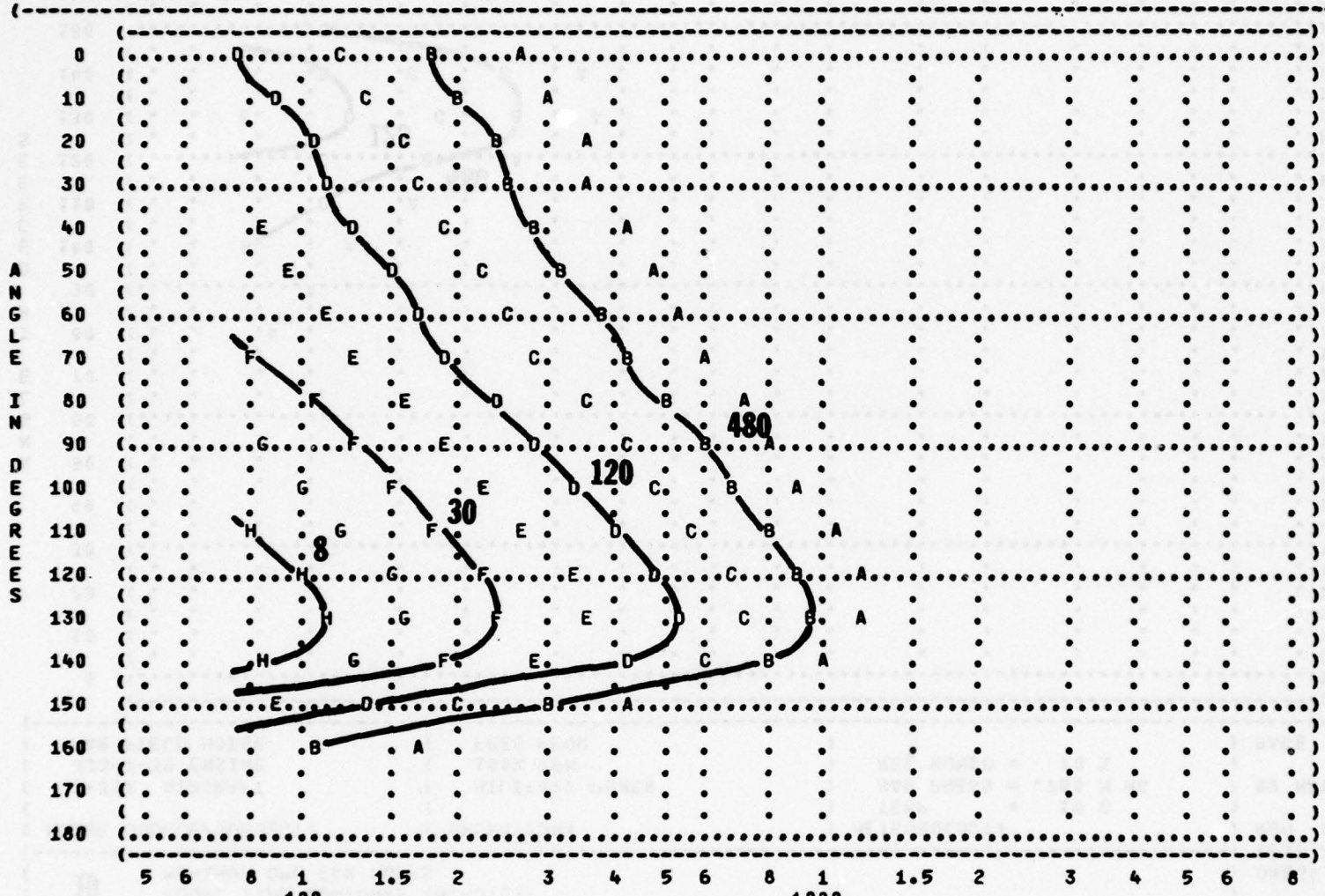
MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)
EQUAL TIME CONTOURS (MINUTES)
NO PROTECTION

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
MILITARY POWER
100% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-045
RUN 03
09 MAY 75
PAGE 7



POINT	MIN
A	960
B	480
C	240
D	120
E	60
F	30
G	15
H	8

FIGURE 10: MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)
EQUAL TIME CONTOURS (MINUTES)
MINIMUM QPL EAR MUFFS

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-045
RUN 03
09 MAY 75
PAGE 8

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
MILITARY POWER
100% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

POINT	MIN
A	960
B	480
C	240
D	120
E	60

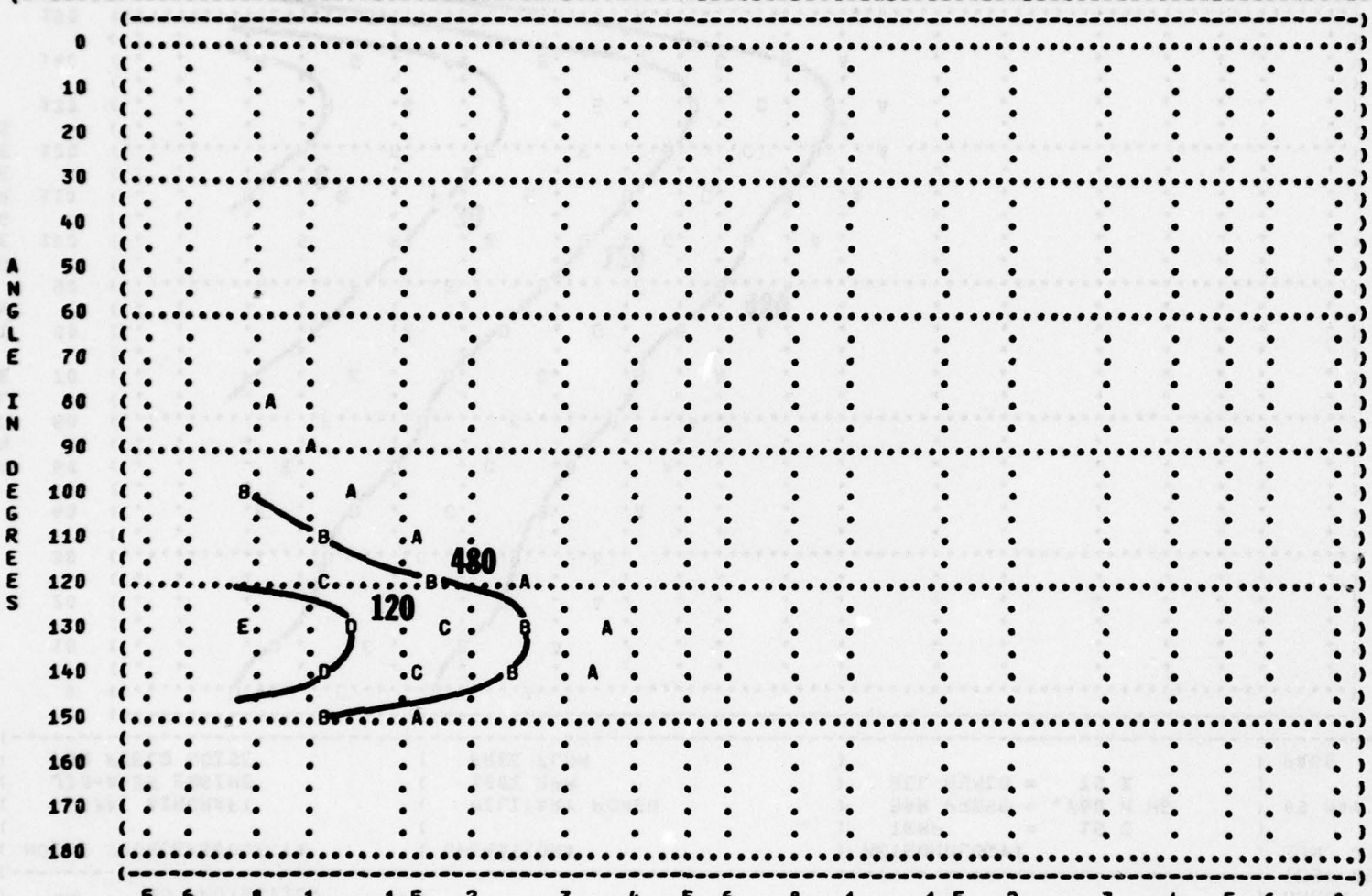


FIGURE 10: MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)
EQUAL TIME CONTOURS (MINUTES)
AMERICAN OPTICAL 1700 EAR MUFFS

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-045
RUN 03
09 MAY 75
PAGE 9

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
MILITARY POWER
100% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

POINT	MIN
A	960
B	480
C	240

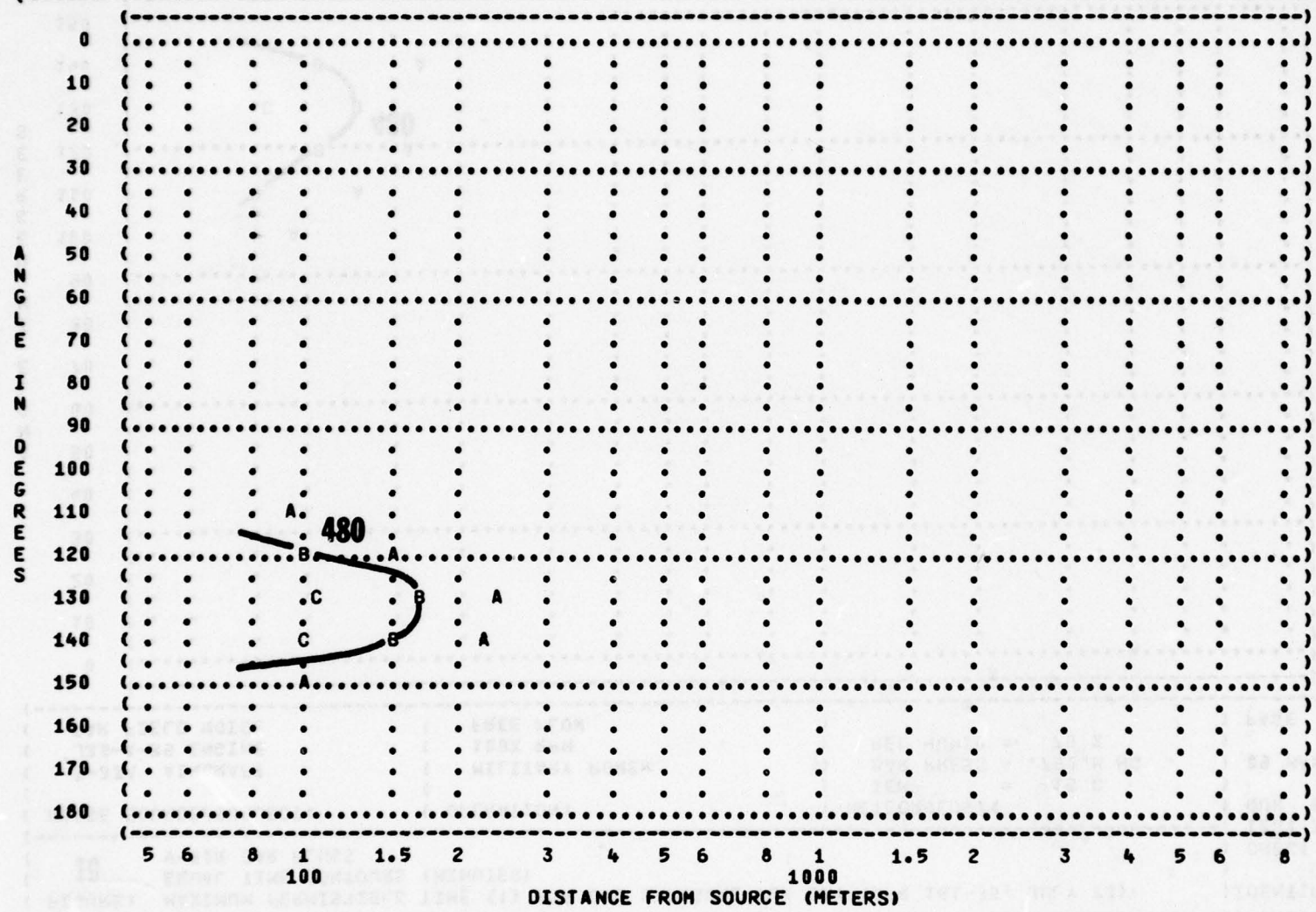


FIGURE: 10

MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)
EQUAL TIME CONTOURS (MINUTES)
V-51R EAR PLUGS

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-045
RUN 03
09 MAY 75
PAGE 10

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
MILITARY POWER
100% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

POINT	MIN
A	960
B	480
C	240

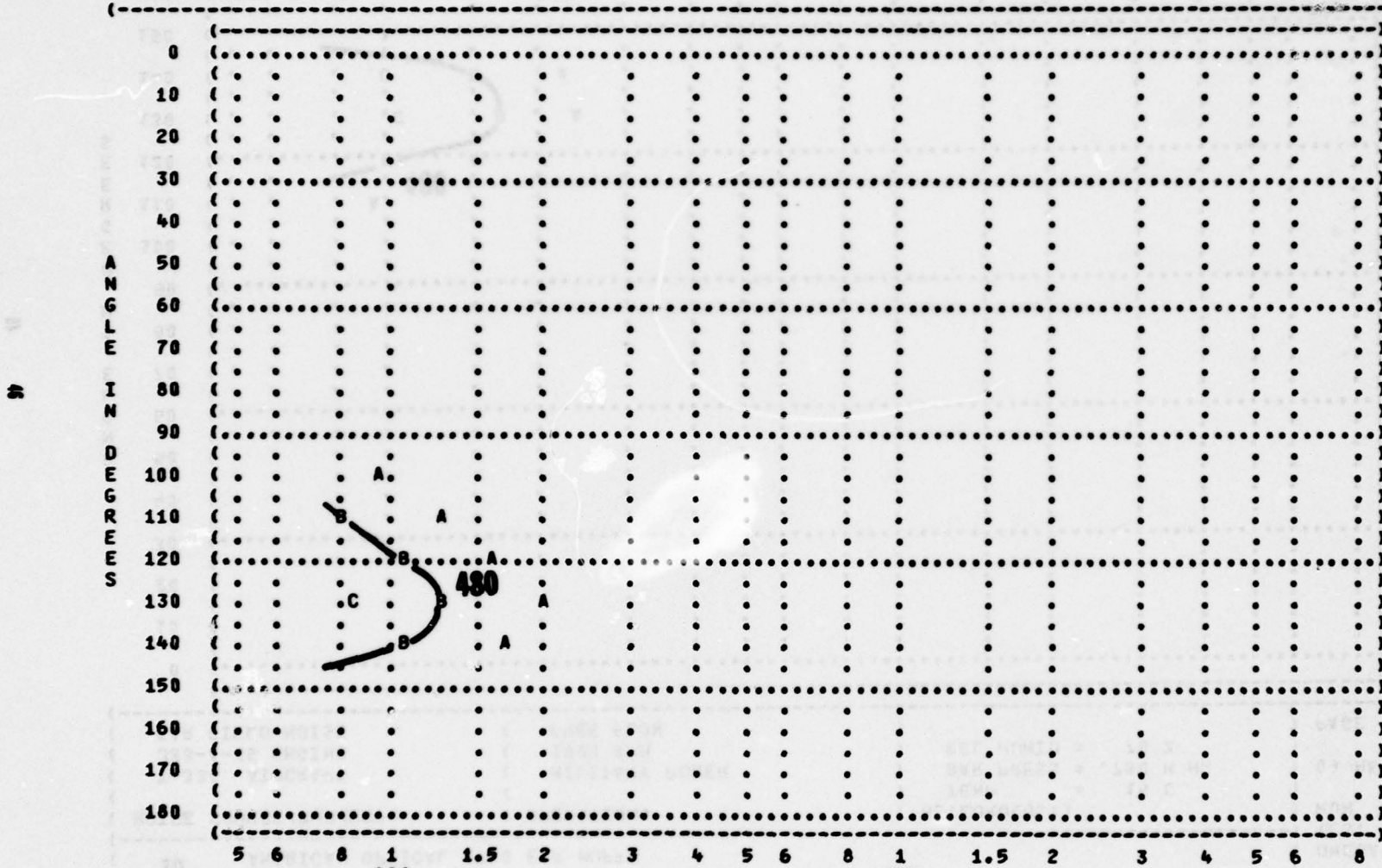


FIGURE 10: MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)
EQUAL TIME CONTOURS (MINUTES)
COMFIT TRIPLE FLANGE EAR PLUGS

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-045
RUN 03
09 MAY 75
PAGE 11

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
MILITARY POWER
100% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

POINT	MIN
A	960
B	480
C	240

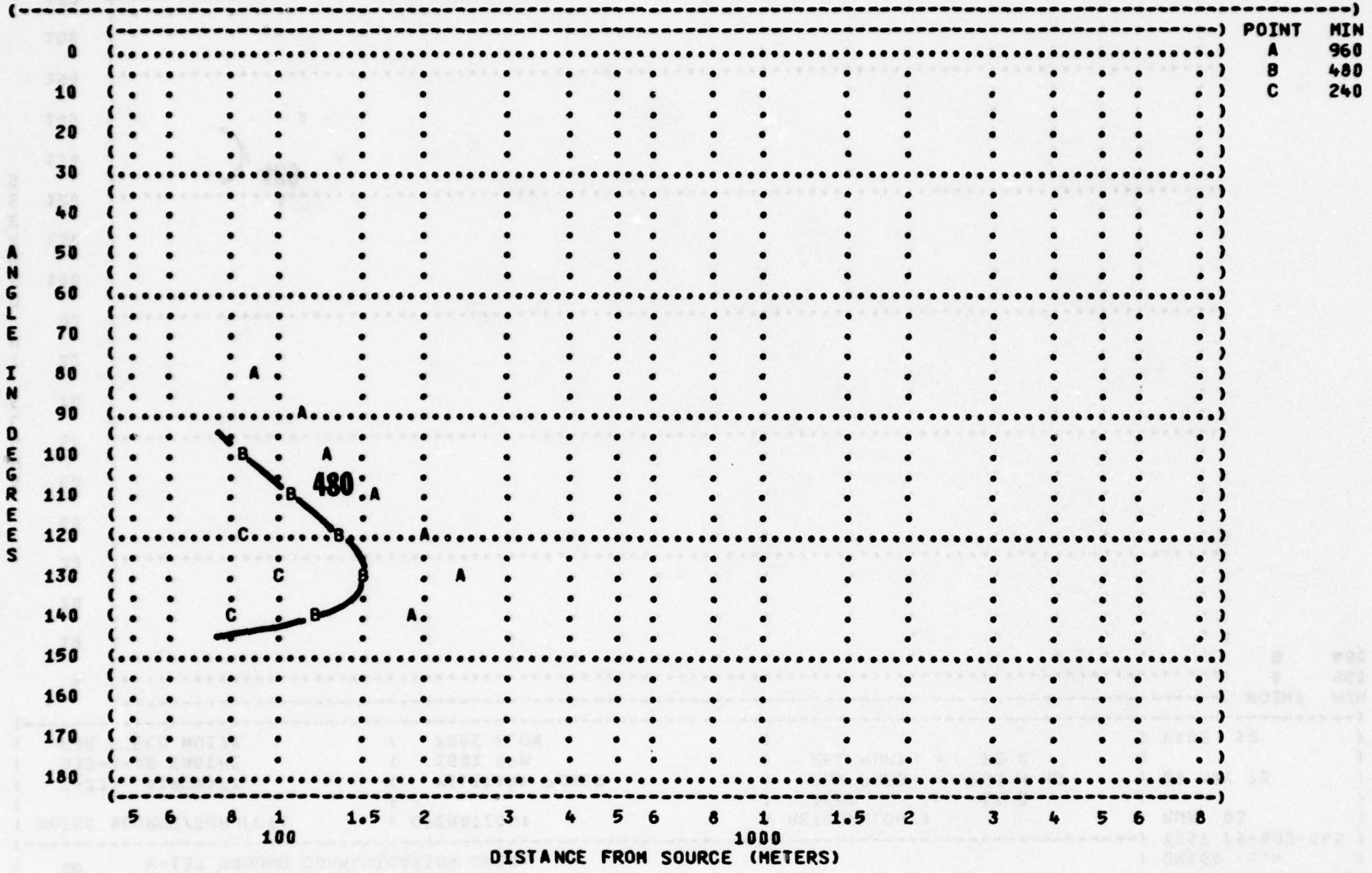


FIGURE 10: MAXIMUM PERMISSIBLE TIME (T) FOR ONE EXPOSURE PER DAY (AFR 161-35, JULY 73)
EQUAL TIME CONTOURS (MINUTES)
H-133 GROUND COMMUNICATION UNIT

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
MILITARY POWER
100% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-045
RUN 03
09 MAY 75
PAGE 12

POINT	MIN
A	960
B	480

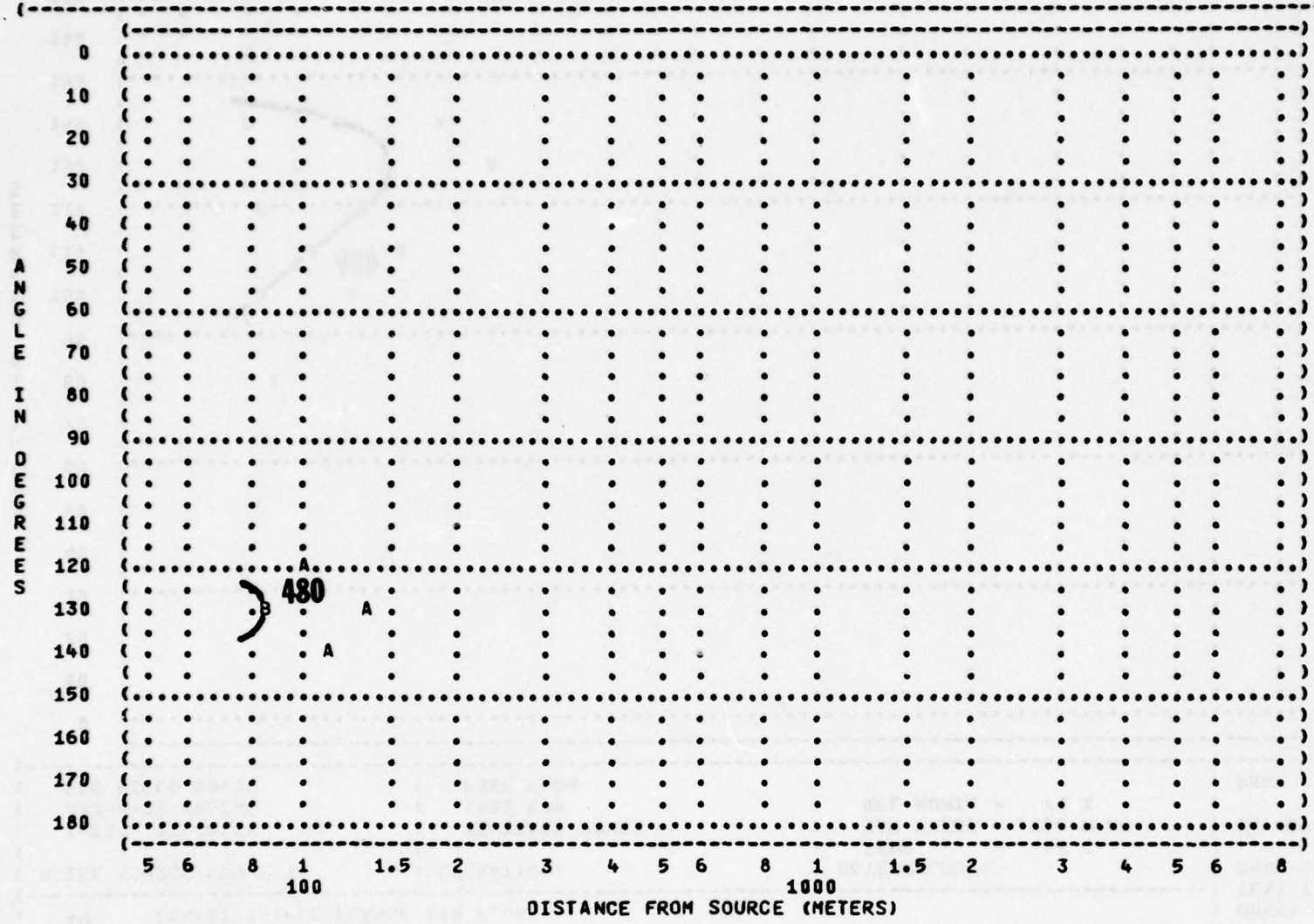


FIGURE 11: SOUND PRESSURE LEVEL (SPL) EQUAL LEVEL CONTOURS (DB) 31.5 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
IDLE POWER
35% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-045
RUN 01
09 MAY 75
PAGE 18

POINT	DB
A	35
B	40
C	45
D	50
E	55
F	60
G	65
H	70
I	75

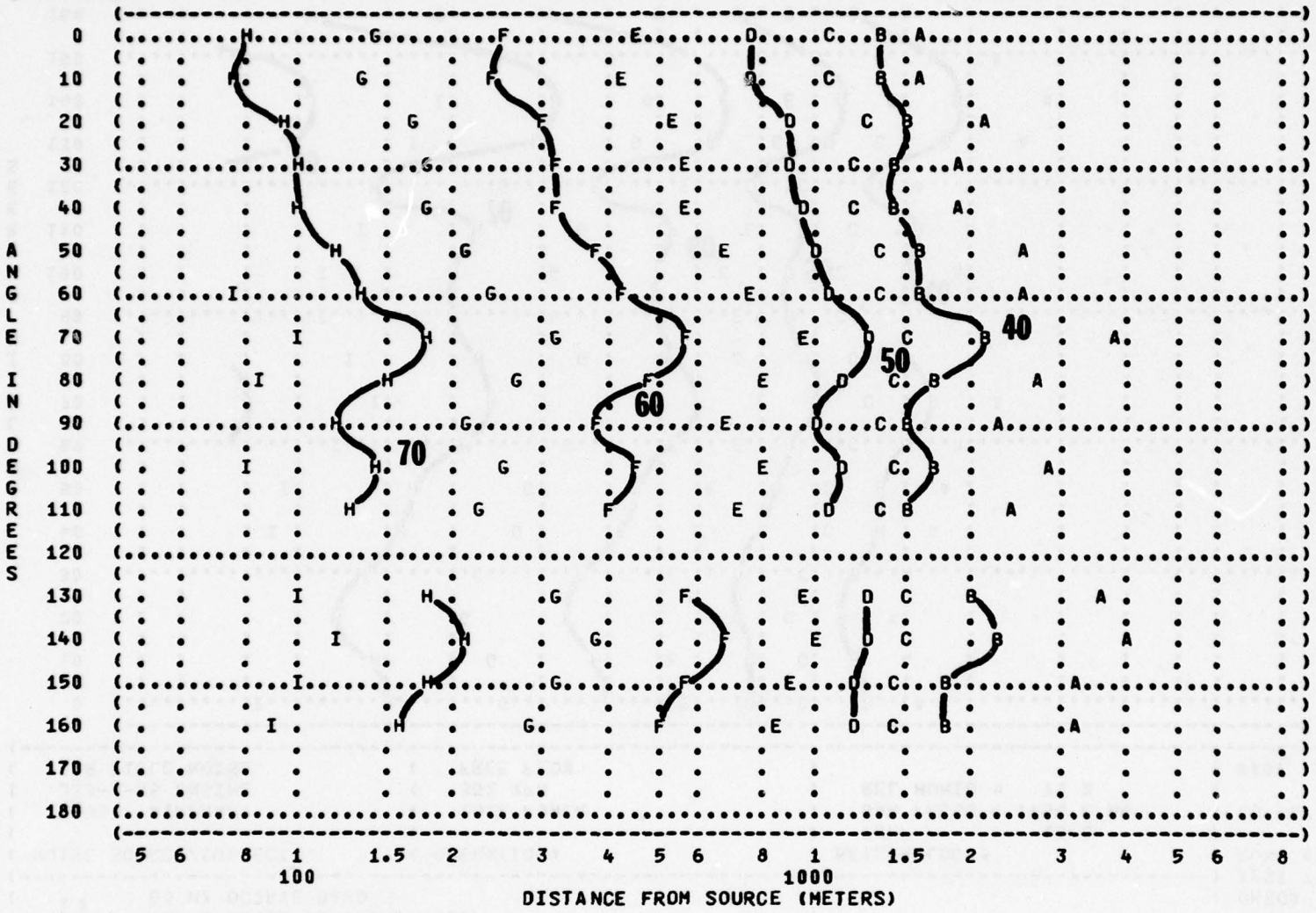


FIGURE 11: SOUND PRESSURE LEVEL (SPL) EQUAL LEVEL CONTOURS (DB) 63 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
IDLE POWER
35% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-045
RUN 01
09 MAY 75
PAGE 19

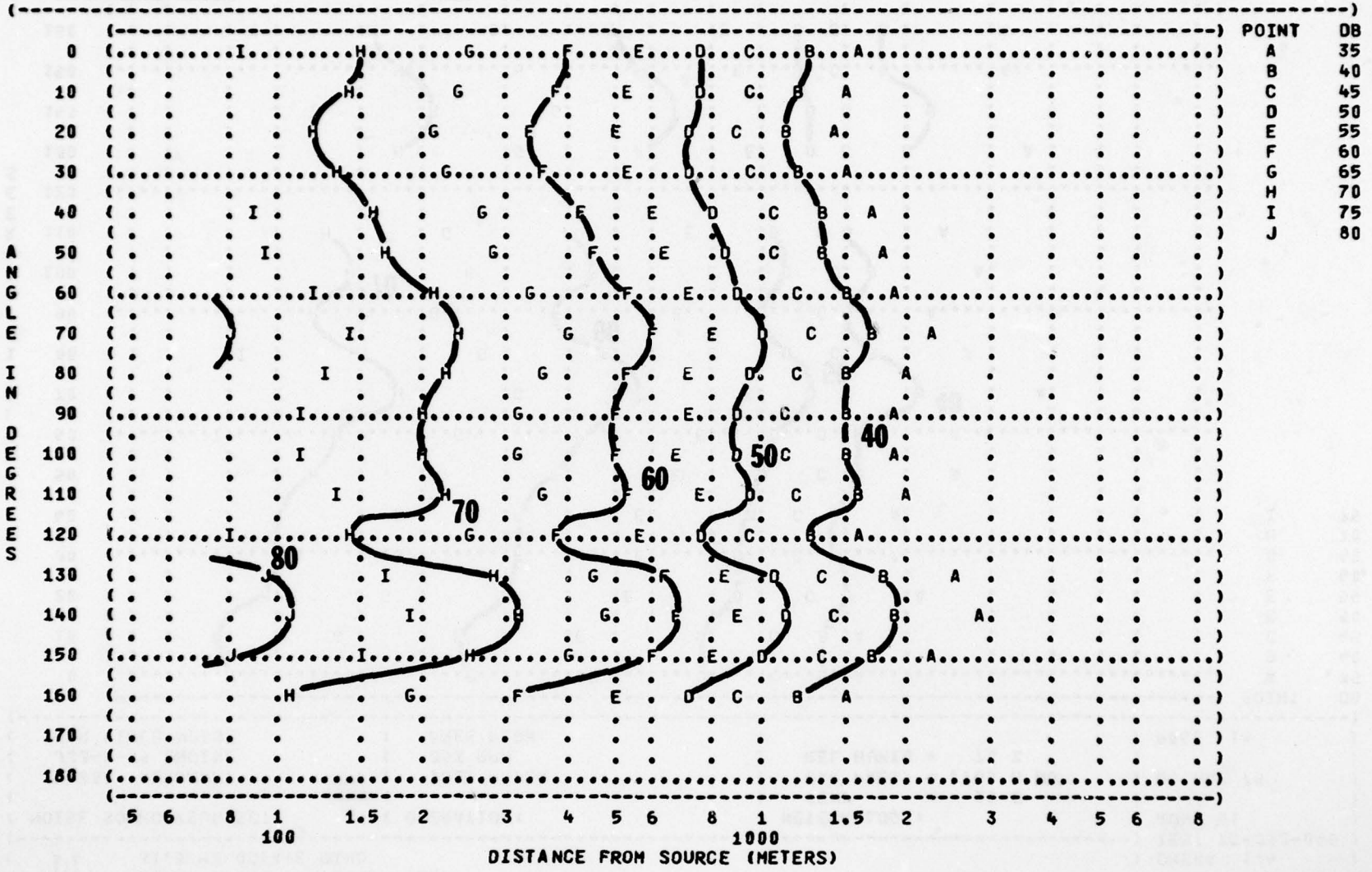


FIGURE 11: SOUND PRESSURE LEVEL (SPL) EQUAL LEVEL CONTOURS (DB) 125 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
IDLE POWER
35% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-045
RUN 01
09 MAY 75
PAGE 20

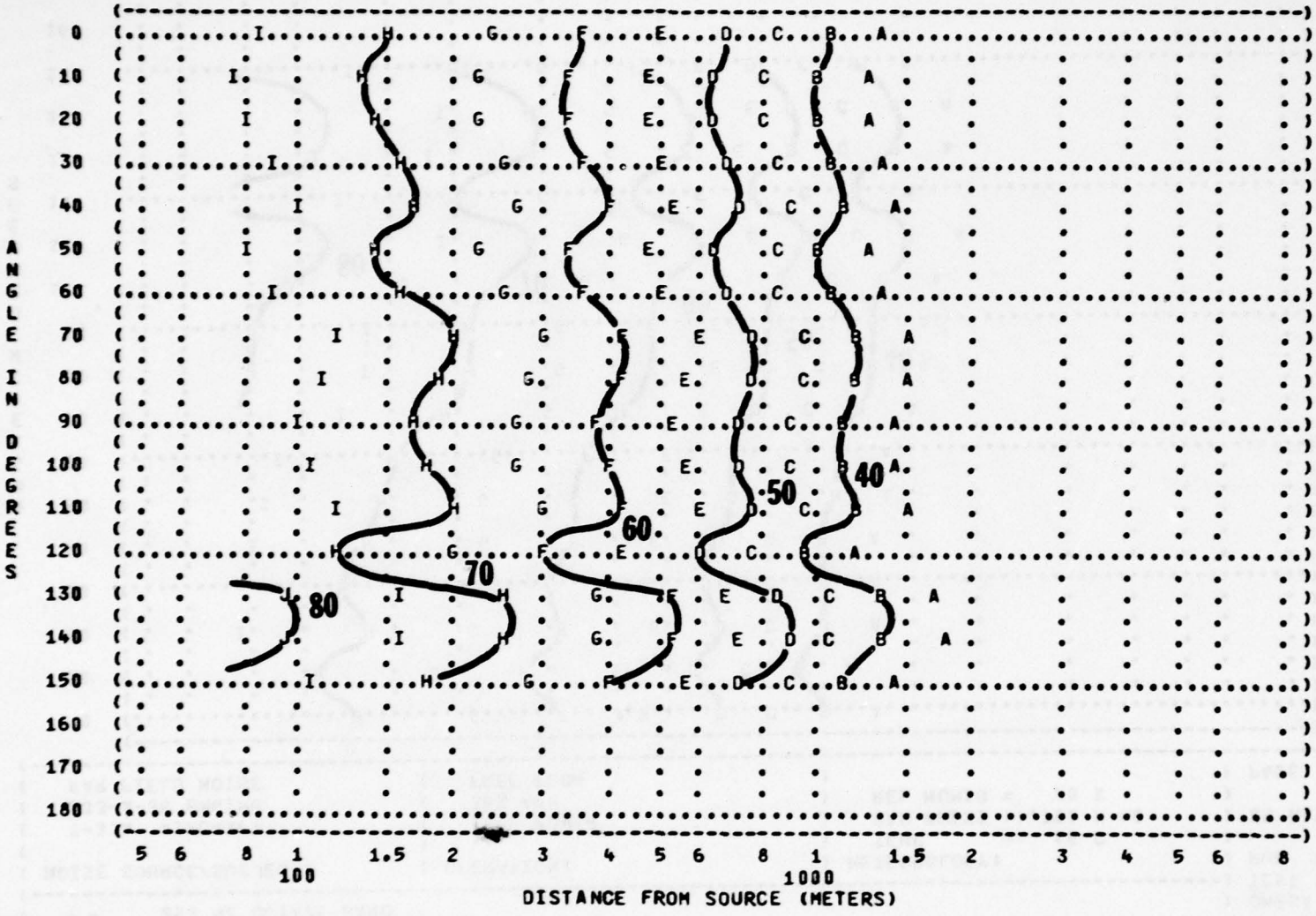


FIGURE 11: SOUND PRESSURE LEVEL (SPL) EQUAL LEVEL CONTOURS (DB) 250 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
IDLE POWER
35% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-045
RUN 01
09 MAY 75
PAGE 21

POINT	DB
A	35
B	40
C	45
D	50
E	55
F	60
G	65
H	70
I	75
J	80

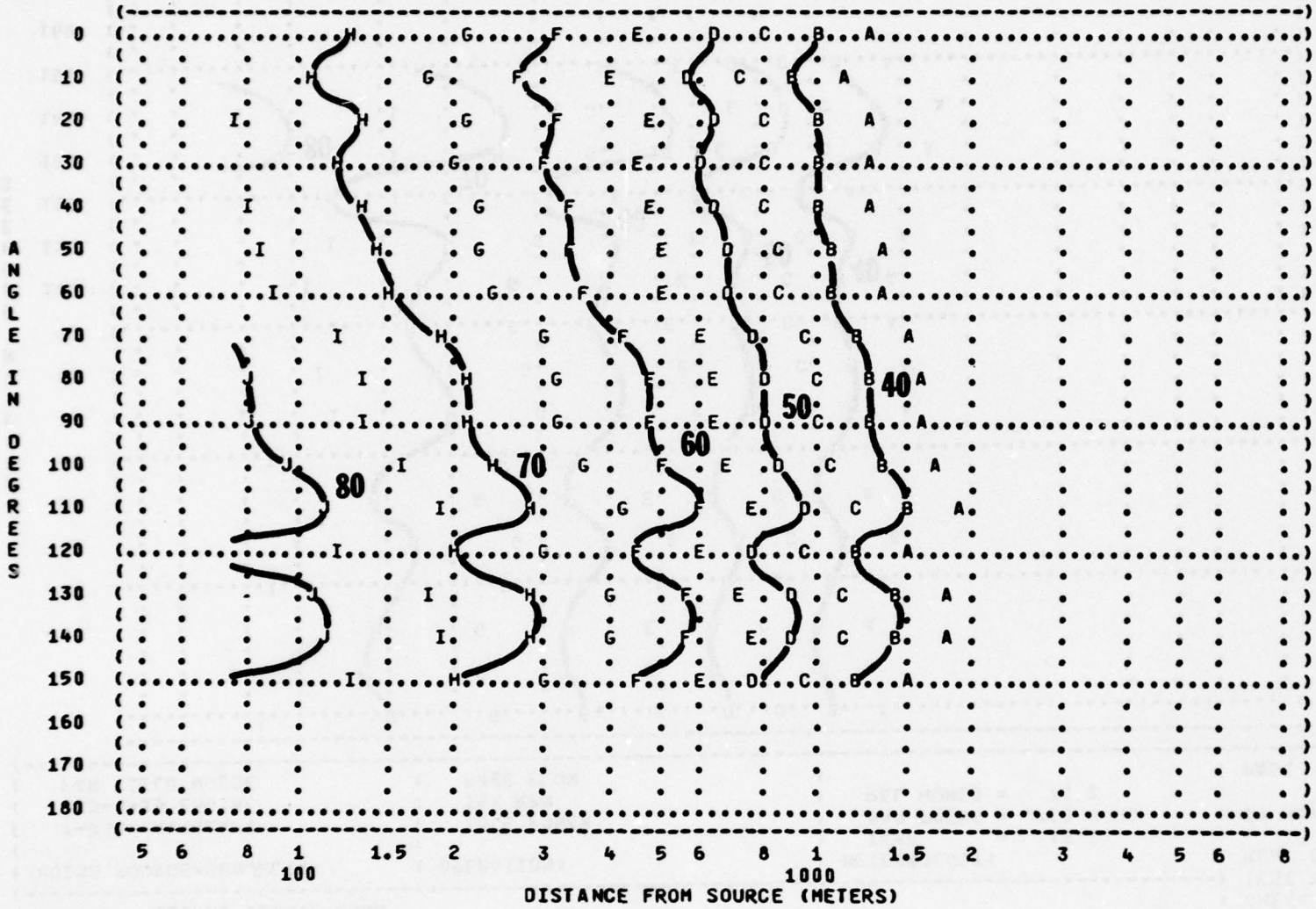


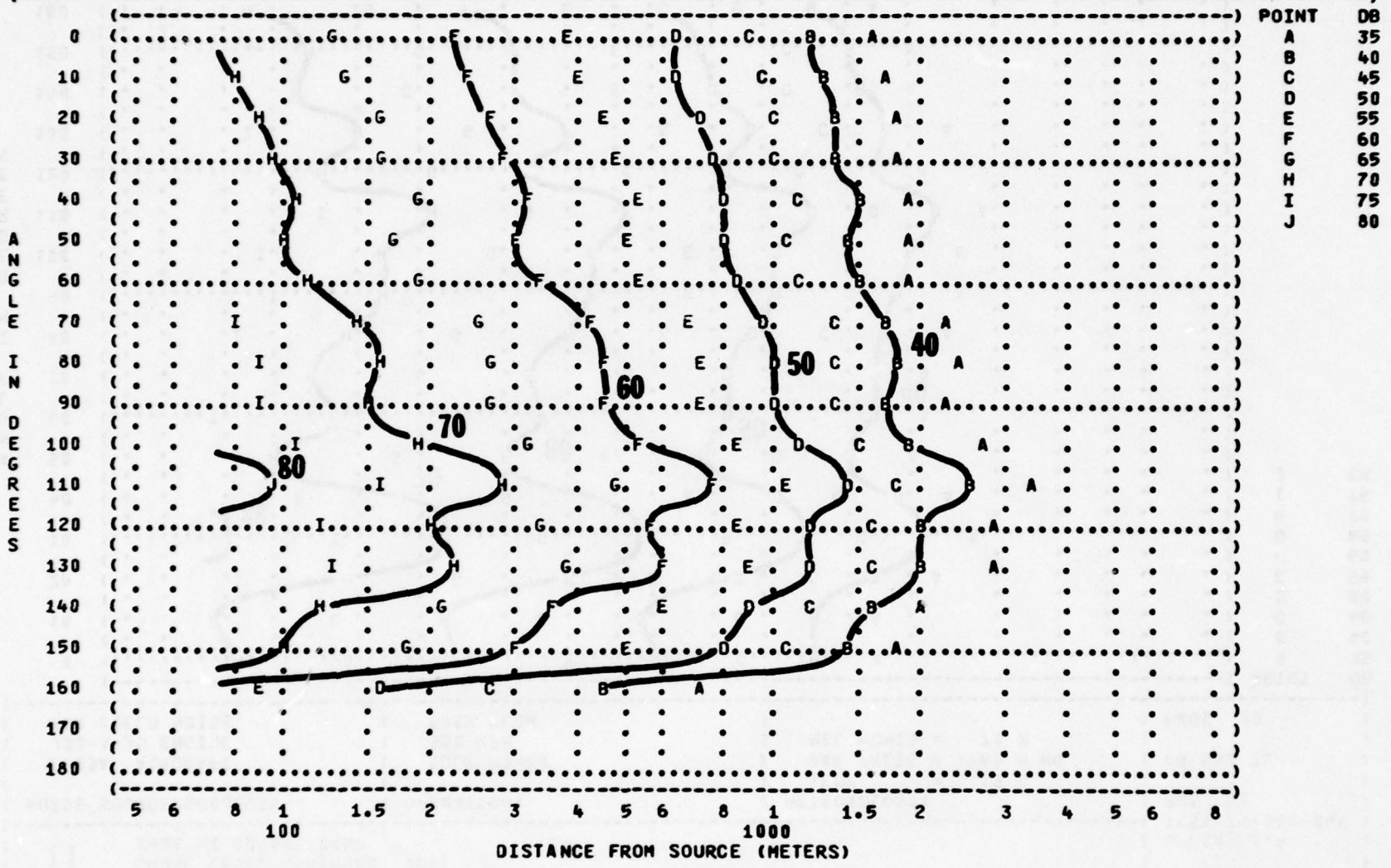
FIGURE 11: SOUND PRESSURE LEVEL (SPL) EQUAL LEVEL CONTOURS (DB) 500 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
IDLE POWER
35% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-045
RUN 01
09 MAY 75
PAGE 22



POINT	DB
A	35
B	40
C	45
D	50
E	55
F	60
G	65
H	70
I	75
J	80

FIGURE 11: SOUND PRESSURE LEVEL (SPL) EQUAL LEVEL CONTOURS (DB) 1000 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
IDLE POWER
35% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-045
RUN 01
09 MAY 75
PAGE 23

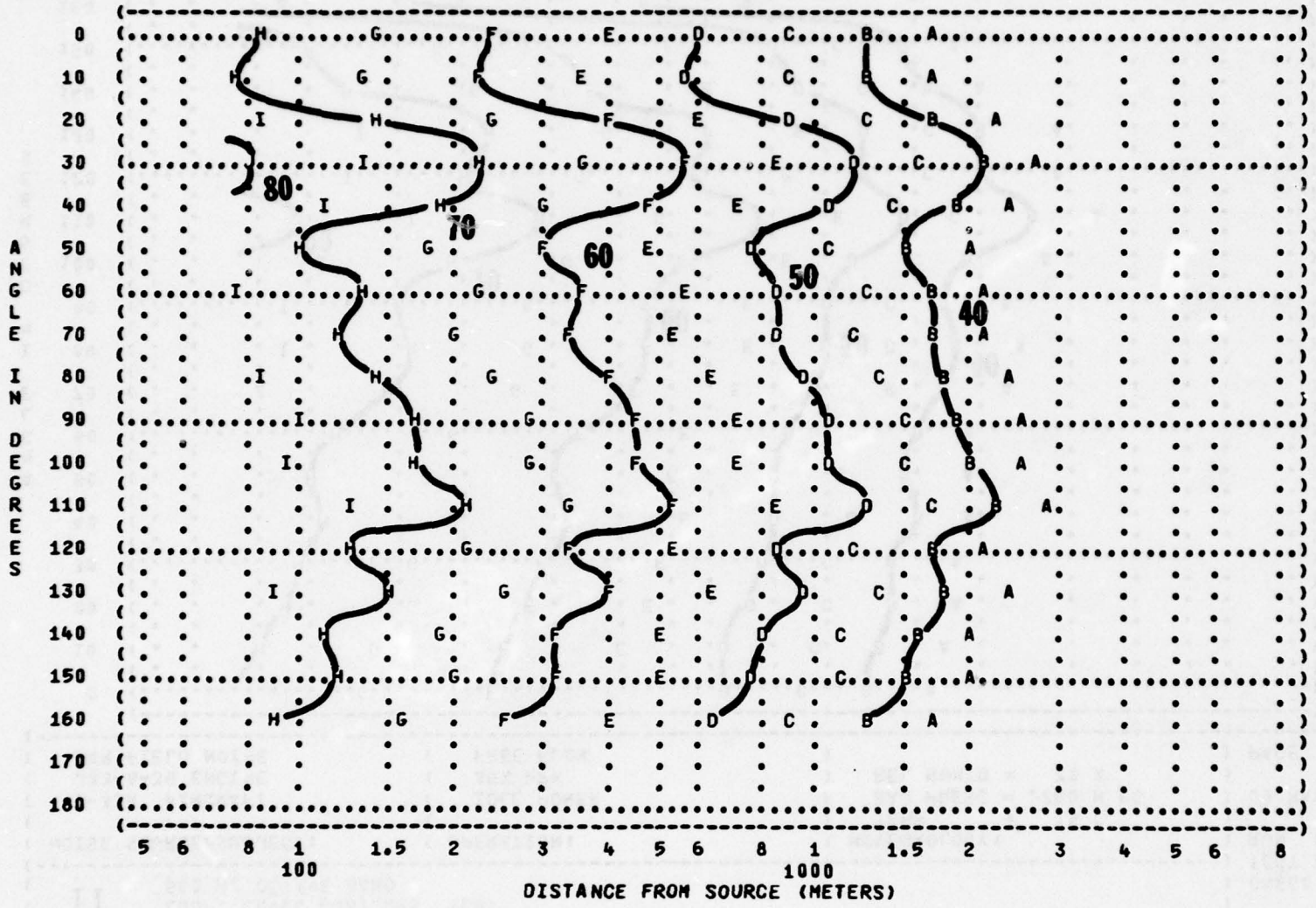


FIGURE: 11

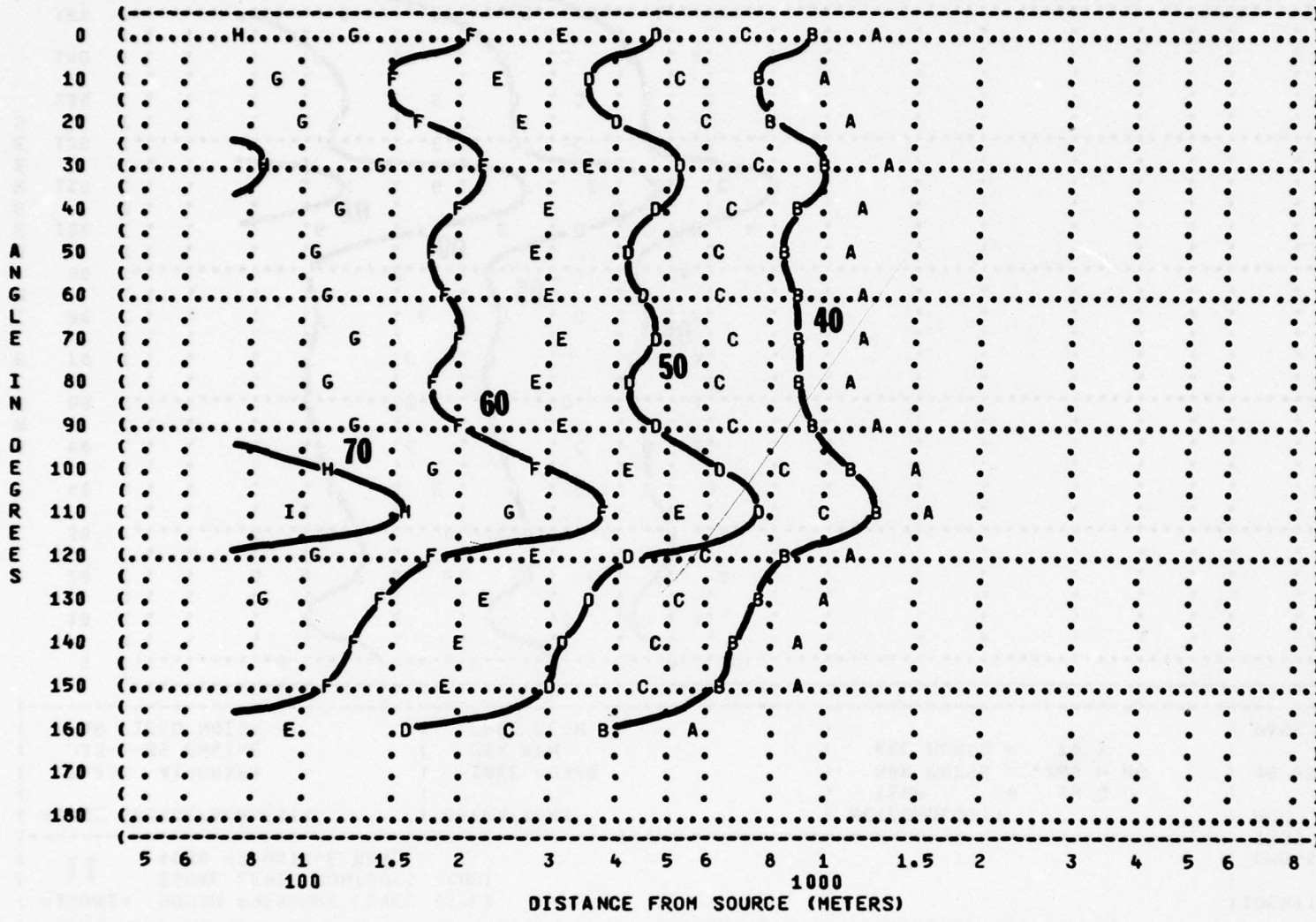
SOUND PRESSURE LEVEL (SPL)
EQUAL LEVEL CONTOURS (DB)
2000 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
IDLE POWER
35% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-045
RUN 01
09 MAY 75
PAGE 24



POINT	DB
A	35
B	40
C	45
D	50
E	55
F	60
G	65
H	70
I	75

FIGURE: 11 SOUND PRESSURE LEVEL (SPL) EQUAL LEVEL CONTOURS (DB) 4000 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
IDLE POWER
35% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-045
RUN 01
09 MAY 75
PAGE 25

POINT	DB
A	35
B	40
C	45
D	50
E	55
F	60
G	65
H	70

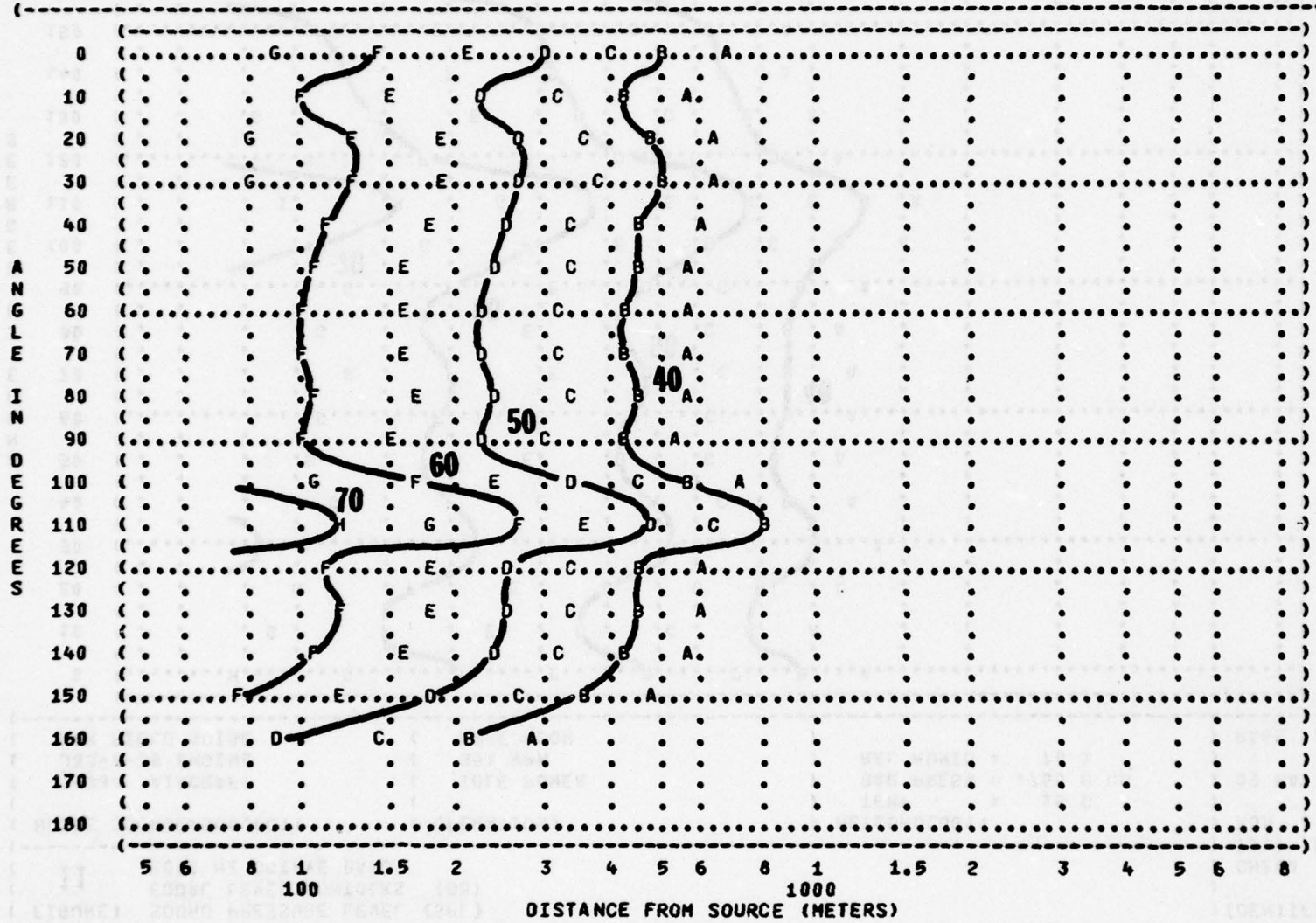


FIGURE 11: SOUND PRESSURE LEVEL (SPL) EQUAL LEVEL CONTOURS (DB) 8000 HZ OCTAVE BAND

IDENTIFICATION: OMEGA 1.4 TEST 75-002-045 RUN 01 09 MAY 75 PAGE 26

NOISE SOURCE/SUBJECT: T-33A AIRCRAFT J33-A-35 ENGINE FAR FIELD NOISE

OPERATION: IDLE POWER 35% RPM FREE FLOW

METEOROLOGY: TEMP = 15 C BAR PRESS = .760 M HG REL HUMID = 70 %

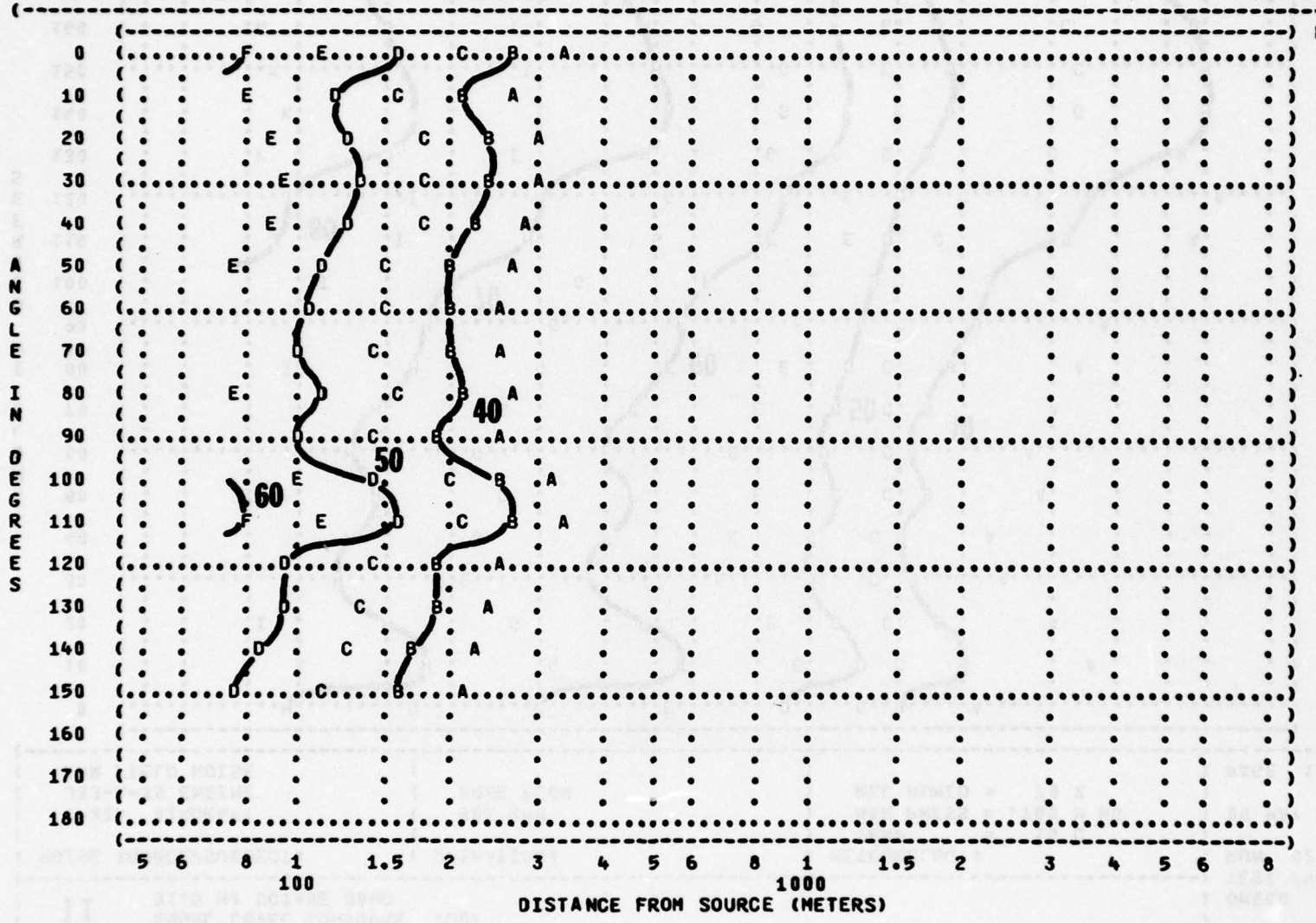


FIGURE 11: SOUND PRESSURE LEVEL (SPL) EQUAL LEVEL CONTOURS (DB) 31.5 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
50% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-045
RUN 02
09 MAY 75
PAGE 18

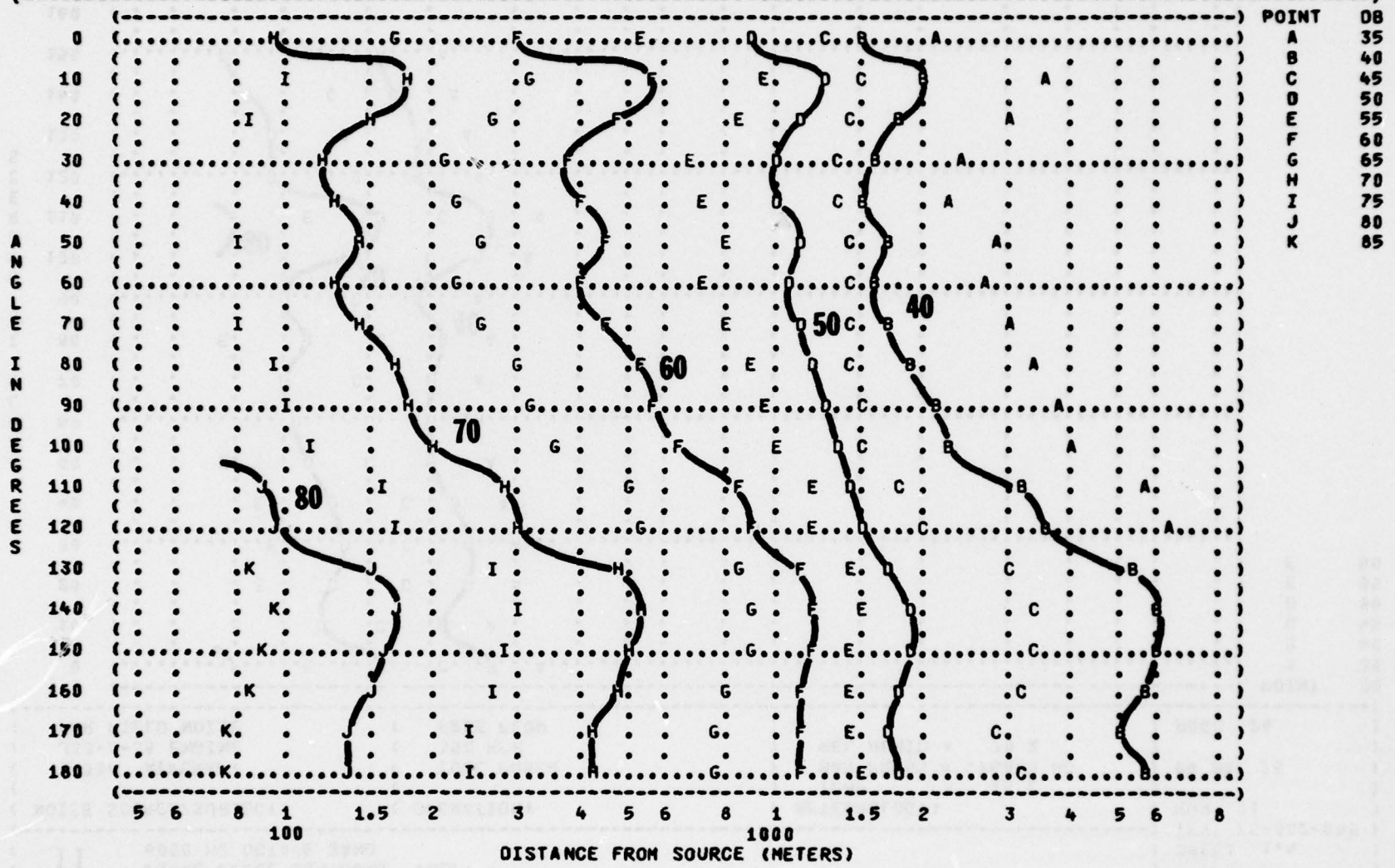


FIGURE 11: SOUND PRESSURE LEVEL (SPL) EQUAL LEVEL CONTOURS (DB) 63 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
50% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-045
RUN 02
09 MAY 75
PAGE 19

POINT	DB
A	35
B	40
C	45
D	50
E	55
F	60
G	65
H	70
I	75
J	80
K	85
L	90

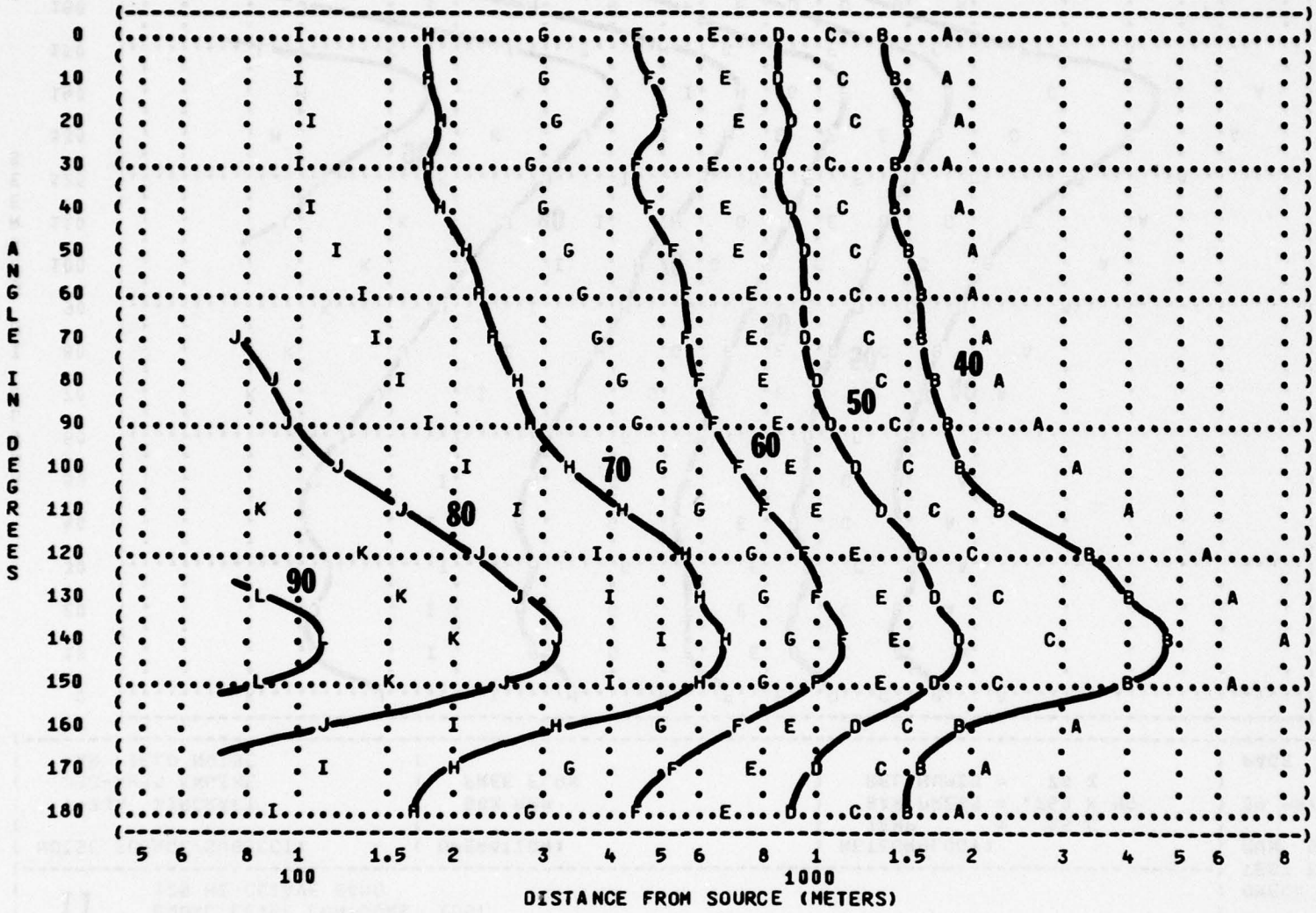


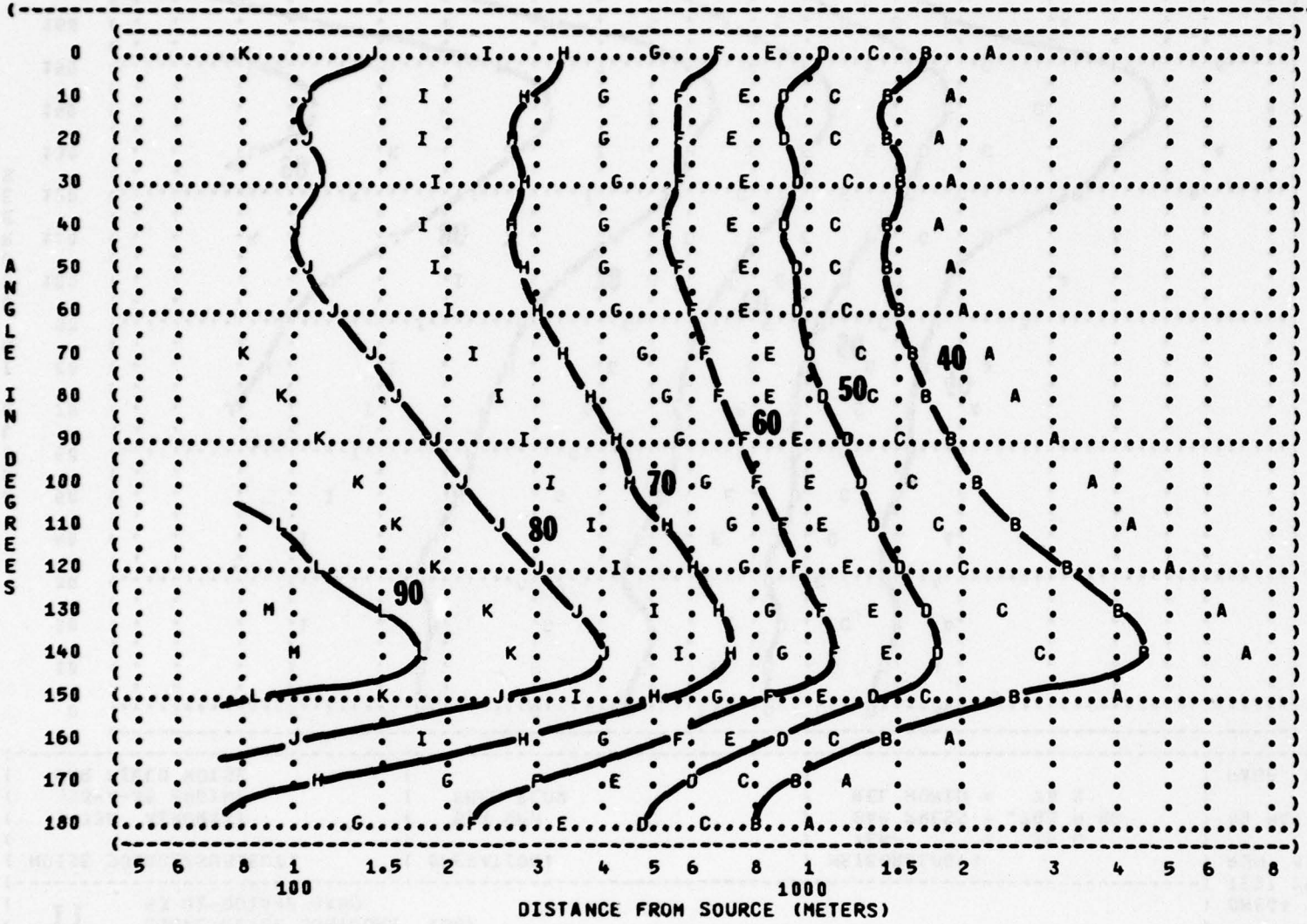
FIGURE 11 SOUND PRESSURE LEVEL (SPL) EQUAL LEVEL CONTOURS (DB) 125 HZ OCTAVE BAND

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-045
RUN 02
09 MAY 75
PAGE 20

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
50% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %



POINT	DB
A	35
B	40
C	45
D	50
E	55
F	60
G	65
H	70
I	75
J	80
K	85
L	90
M	95

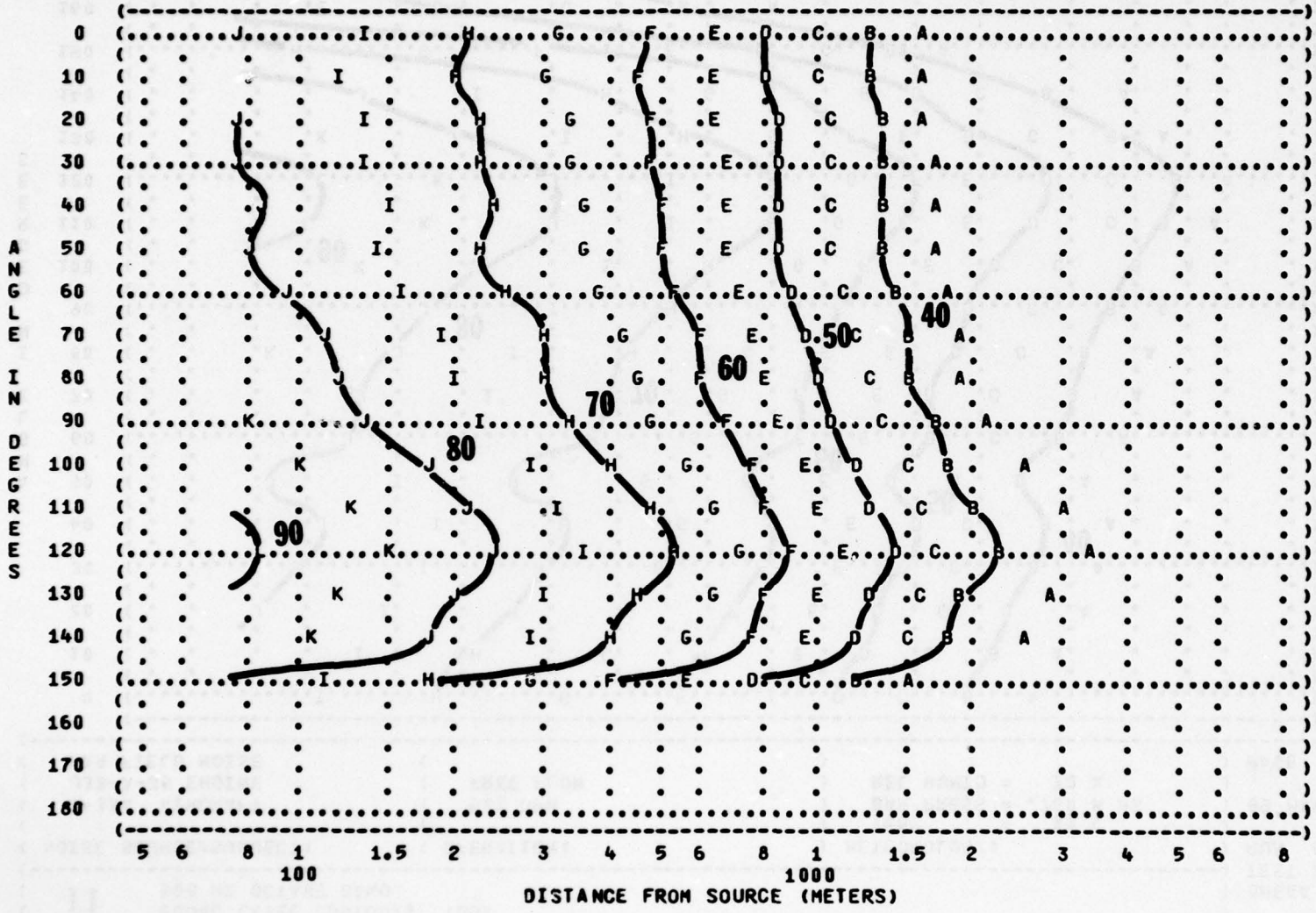
FIGURE 11: SOUND PRESSURE LEVEL (SPL) EQUAL LEVEL CONTOURS (DB) 250 HZ OCTAVE BAND

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-045
RUN 02
09 MAY 75
PAGE 21

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
50% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %



POINT	DB
A	35
B	40
C	45
D	50
E	55
F	60
G	65
H	70
I	75
J	80
K	85
L	90

FIGURE 11 SOUND PRESSURE LEVEL (SPL) EQUAL LEVEL CONTOURS (DB) 500 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
50% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-045
RUN 02
09 MAY 75
PAGE 22

POINT	DB
A	35
B	40
C	45
D	50
E	55
F	60
G	65
H	70
I	75
J	80
K	85
L	90

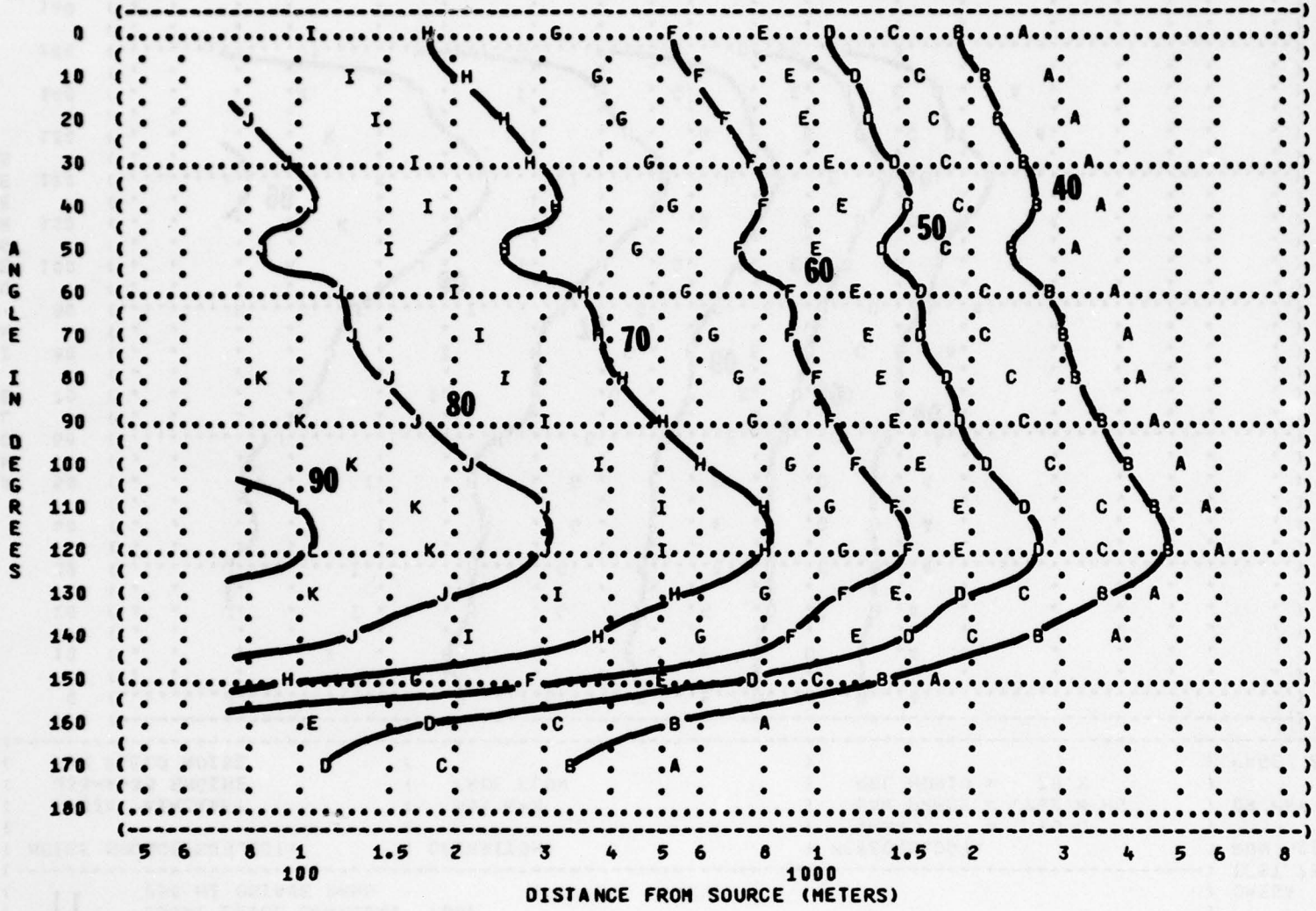


FIGURE 11: SOUND PRESSURE LEVEL (SPL) EQUAL LEVEL CONTOURS (DB) 1000 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
50% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-045
RUN 02
09 MAY 75
PAGE 23

POINT	DB
A	35
B	40
C	45
D	50
E	55
F	60
G	65
H	70
I	75
J	80
K	85
L	90

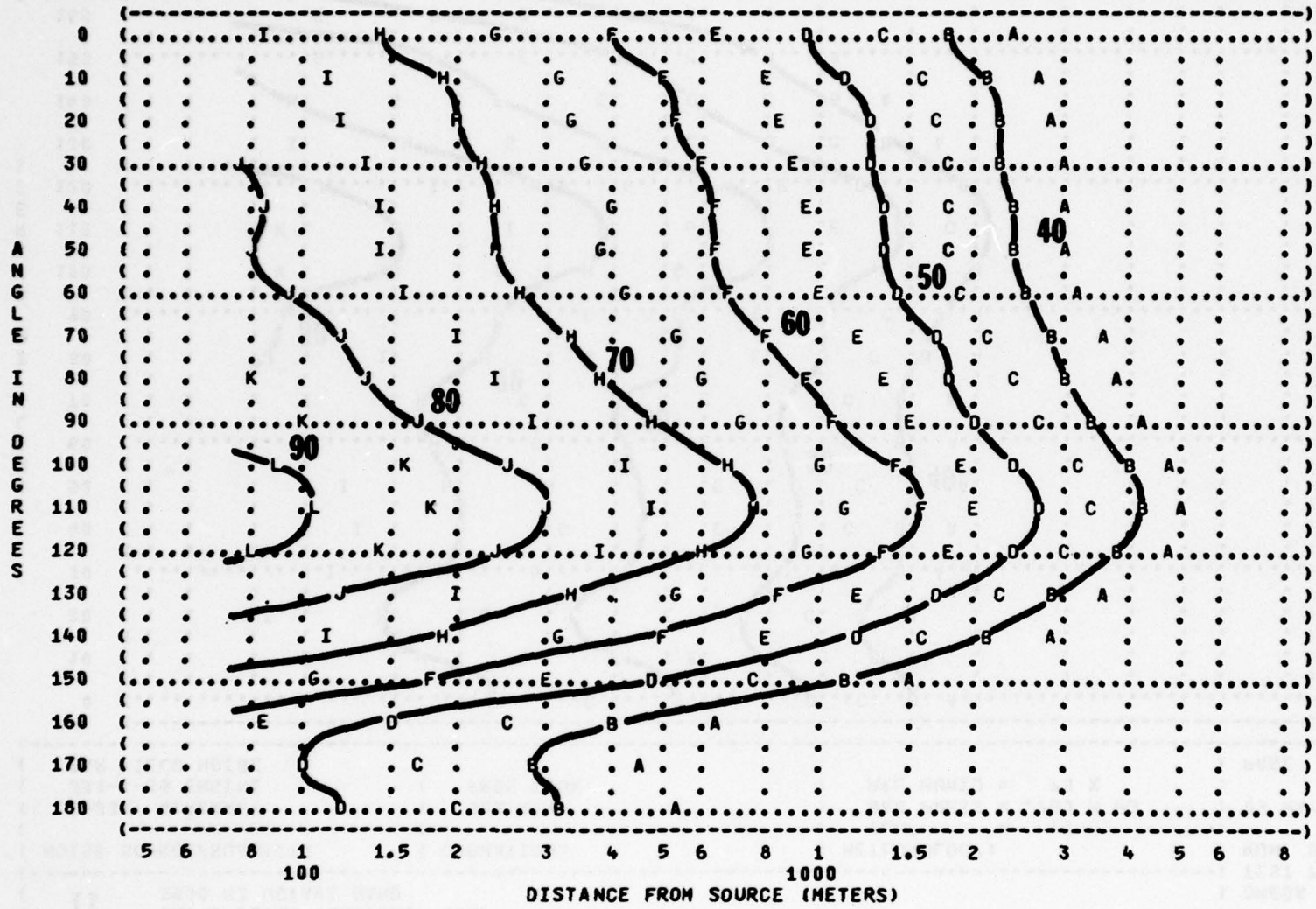


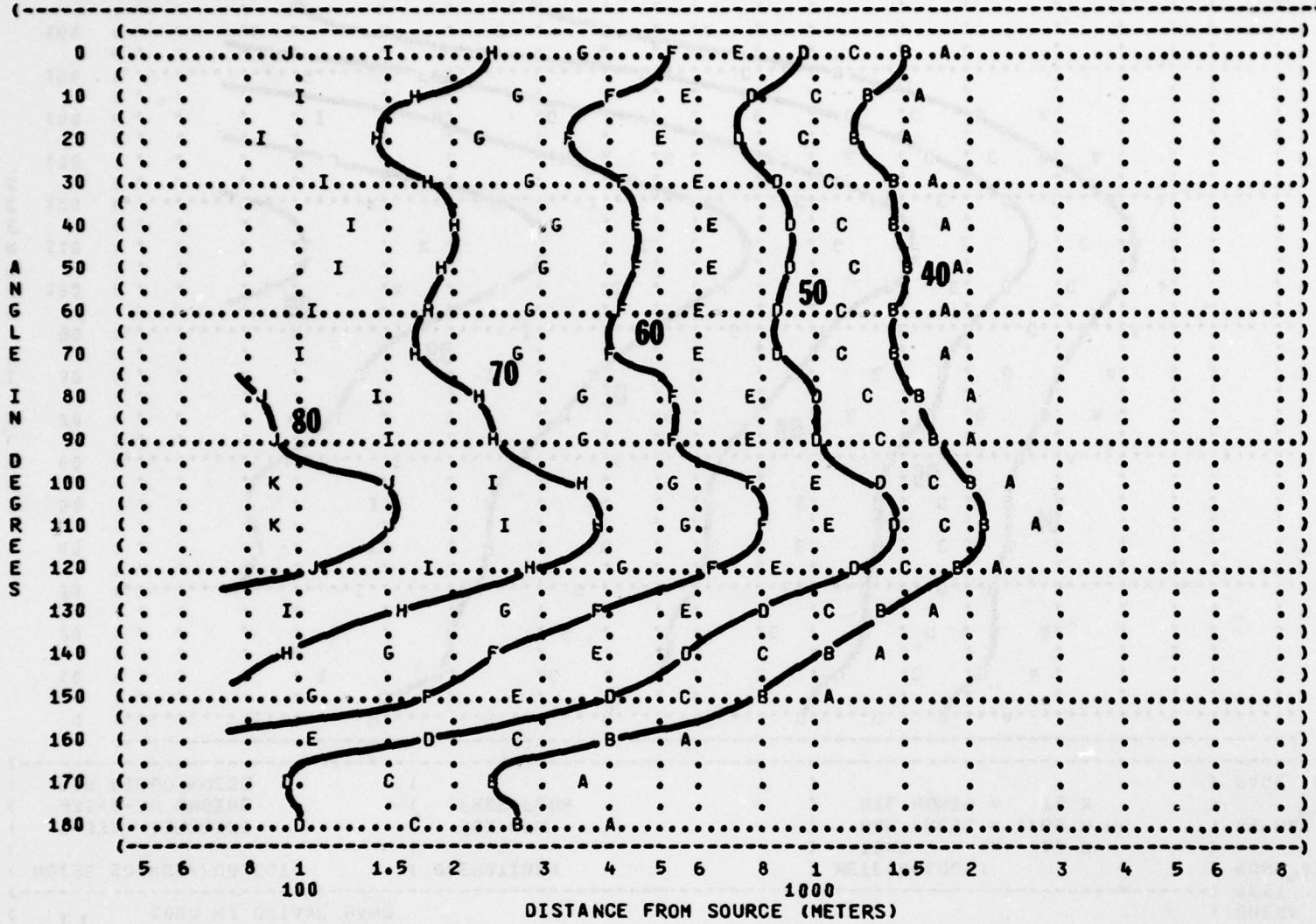
FIGURE 11 SOUND PRESSURE LEVEL (SPL) EQUAL LEVEL CONTOURS (DB) 2000 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
50% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-045
RUN 02
09 MAY 75
PAGE 24



POINT	DB
A	35
B	40
C	45
D	50
E	55
F	60
G	65
H	70
I	75
J	80
K	85

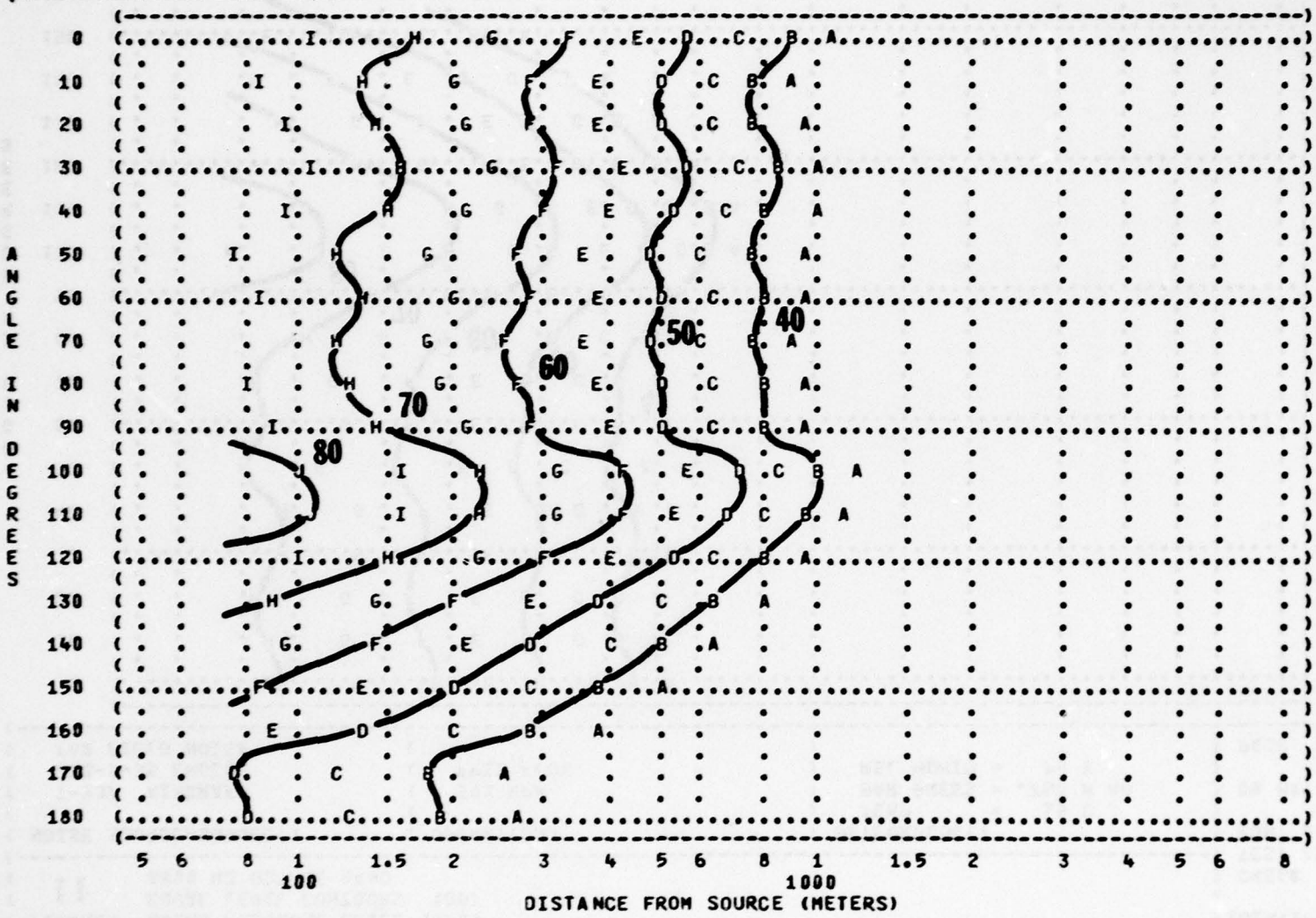
FIGURE 11 SOUND PRESSURE LEVEL (SPL) EQUAL LEVEL CONTOURS (DB) 4000 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
50% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-045
RUN 02
09 MAY 75
PAGE 25



POINT	DB
A	35
B	40
C	45
D	50
E	55
F	60
G	65
H	70
I	75
J	80

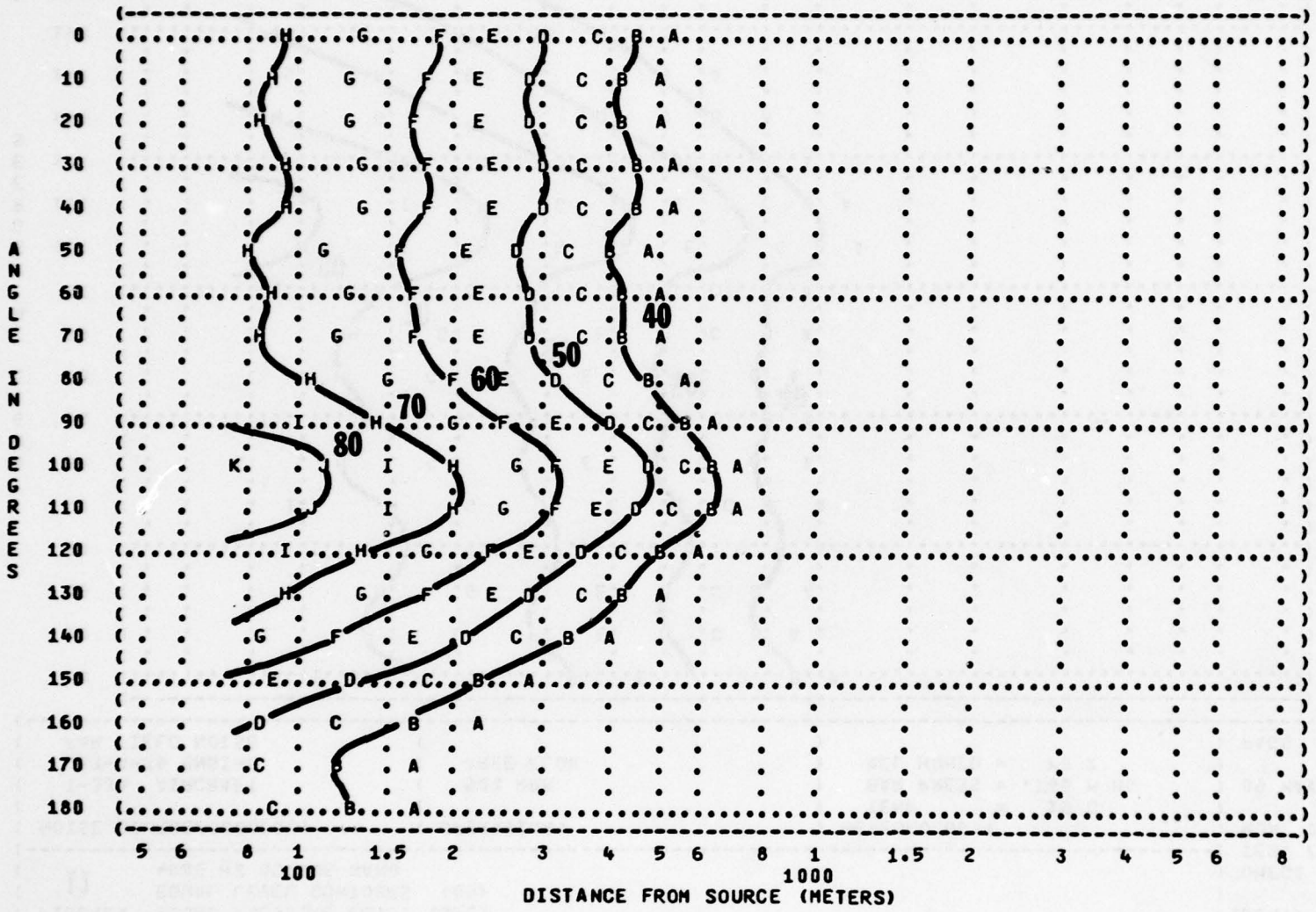
FIGURE: 11 SOUND PRESSURE LEVEL (SPL) EQUAL LEVEL CONTOURS (DB) 8000 HZ OCTAVE BAND

IDENTIFICATION: OMEGA 1.4 TEST 75-002-045 RUN 02 09 MAY 75 PAGE 26

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
50% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %



POINT	DB
A	35
B	40
C	45
D	50
E	55
F	60
G	65
H	70
I	75
J	80
K	85

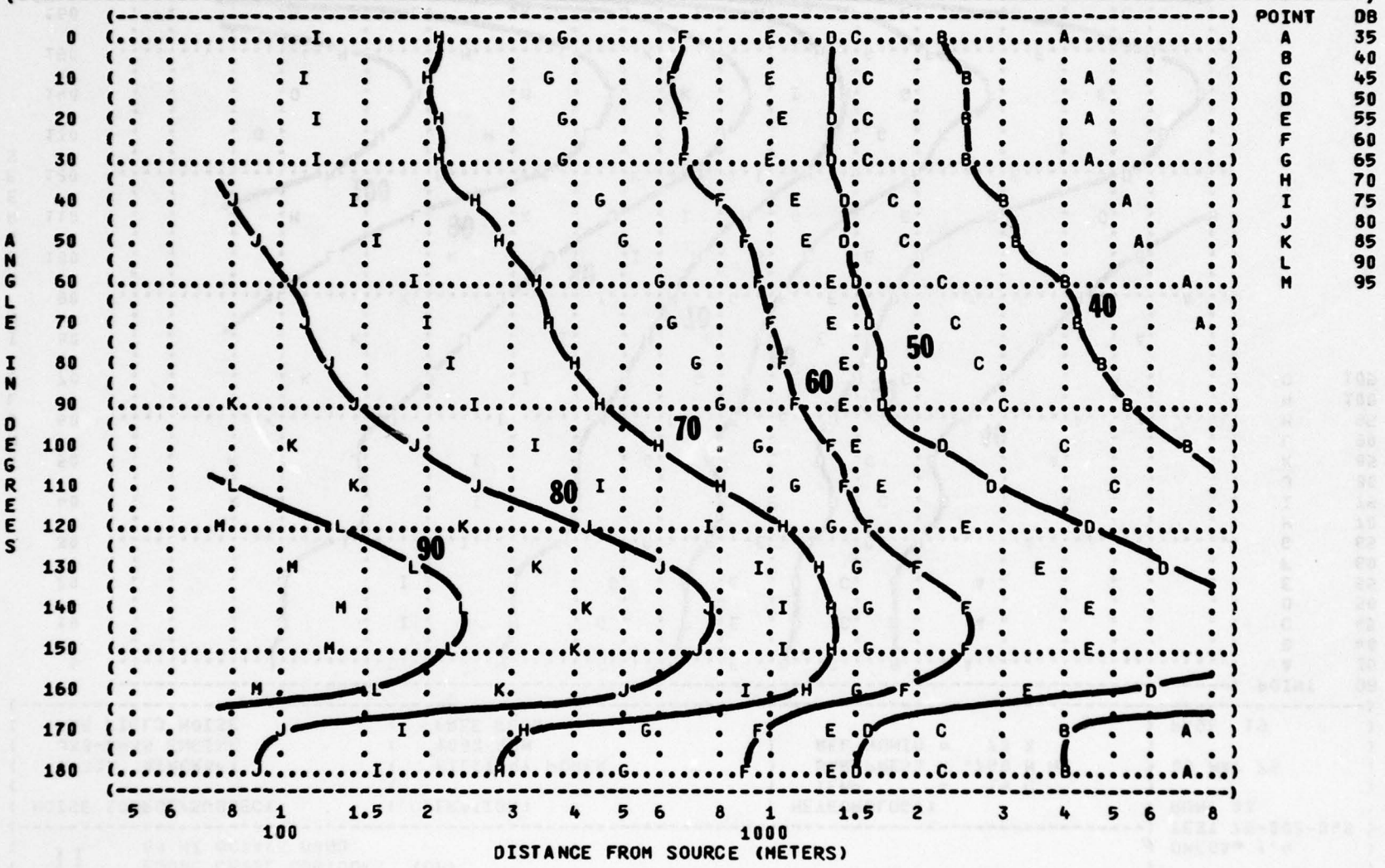
FIGURE 11: SOUND PRESSURE LEVEL (SPL) EQUAL LEVEL CONTOURS (DB) 31.5 HZ OCTAVE BAND

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-045
RUN 03
09 MAY 75
PAGE 18

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
MILITARY POWER
100% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %



POINT	DB
A	35
B	40
C	45
D	50
E	55
F	60
G	65
H	70
I	75
J	80
K	85
L	90
M	95

FIGURE 11 SOUND PRESSURE LEVEL (SPL) EQUAL LEVEL CONTOURS (DB) 63 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
MILITARY POWER
100% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-045
RUN 03
09 MAY 75
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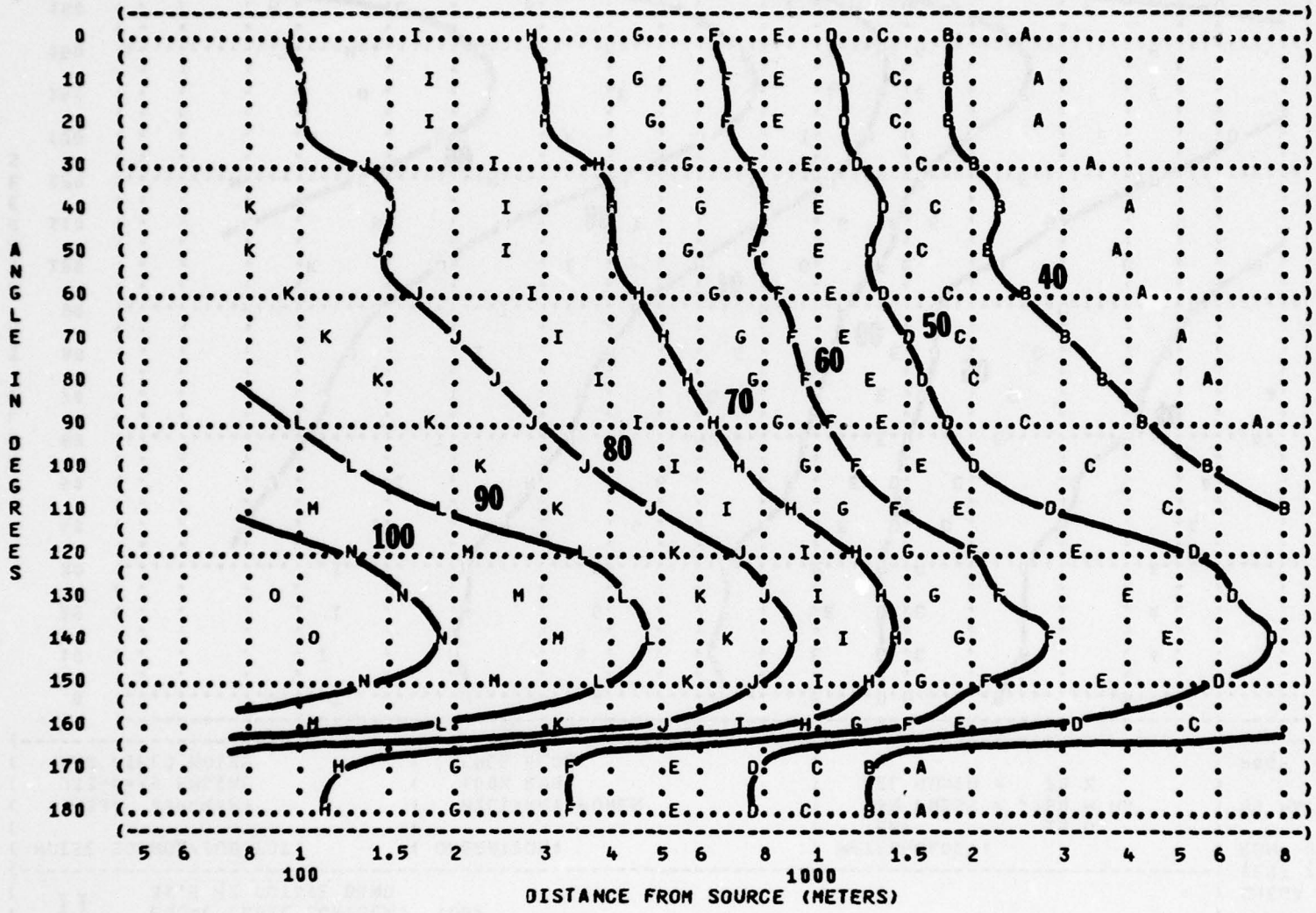


POINT	DB
A	35
B	40
C	45
D	50
E	55
F	60
G	65
H	70
I	75
J	80
K	85
L	90
M	95
N	100
O	105

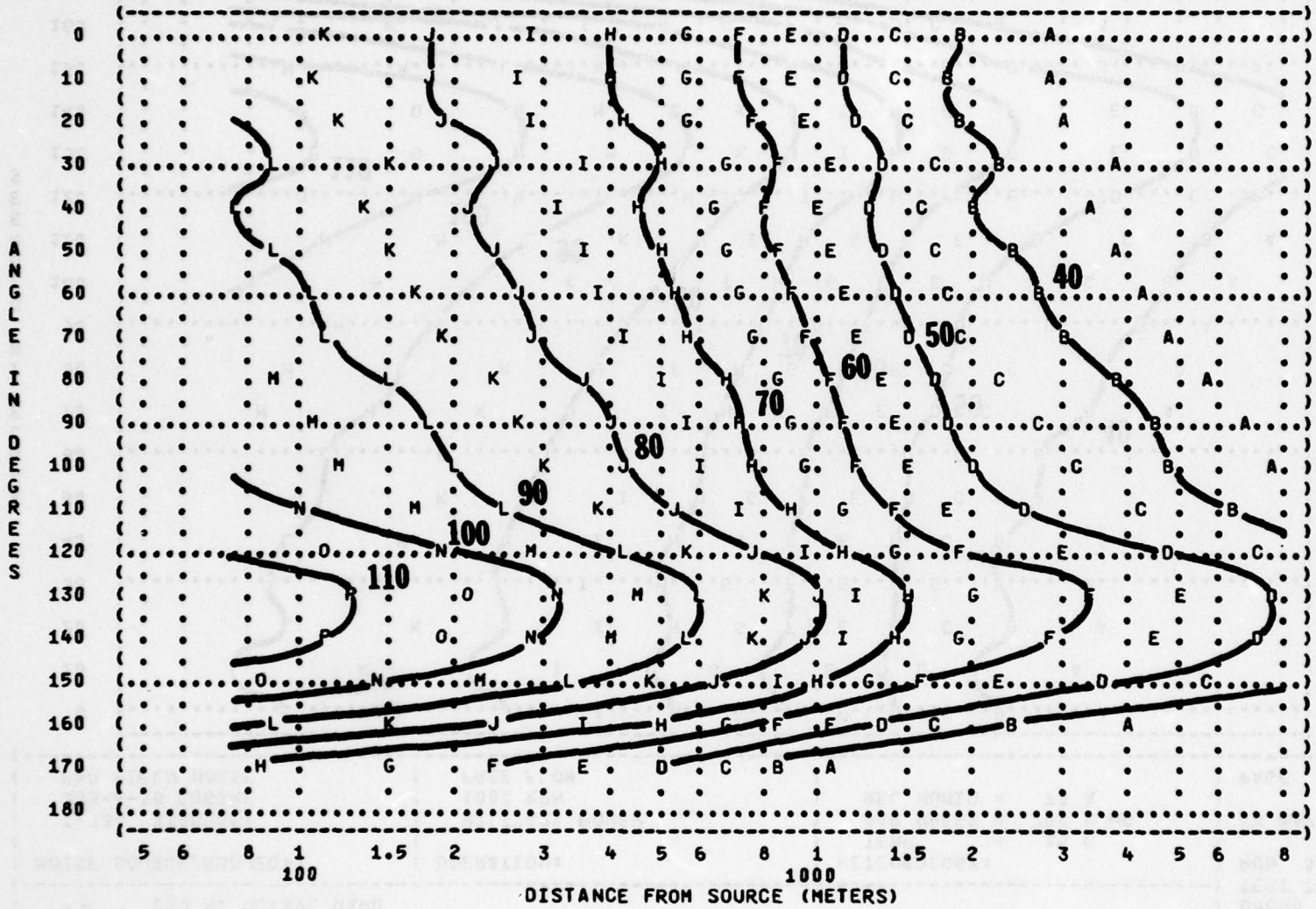
FIGURE 11: SOUND PRESSURE LEVEL (SPL) EQUAL LEVEL CONTOURS (DB) 125 HZ OCTAVE BAND

IDENTIFICATION: OMEGA 1.4 TEST 75-002-045 RUN 03 09 MAY 75 PAGE 20

NOISE SOURCE/SUBJECT: T-33A AIRCRAFT; J33-A-35 ENGINE; FAR FIELD NOISE

OPERATION: MILITARY POWER; 100% RPM; FREE FLOW

METEOROLOGY: TEMP = 15 C; BAR PRESS = .760 M HG; REL HUMID = 70 %



POINT	DB
A	35
B	40
C	45
D	50
E	55
F	60
G	65
H	70
I	75
J	80
K	85
L	90
M	95
N	100
O	105
P	110

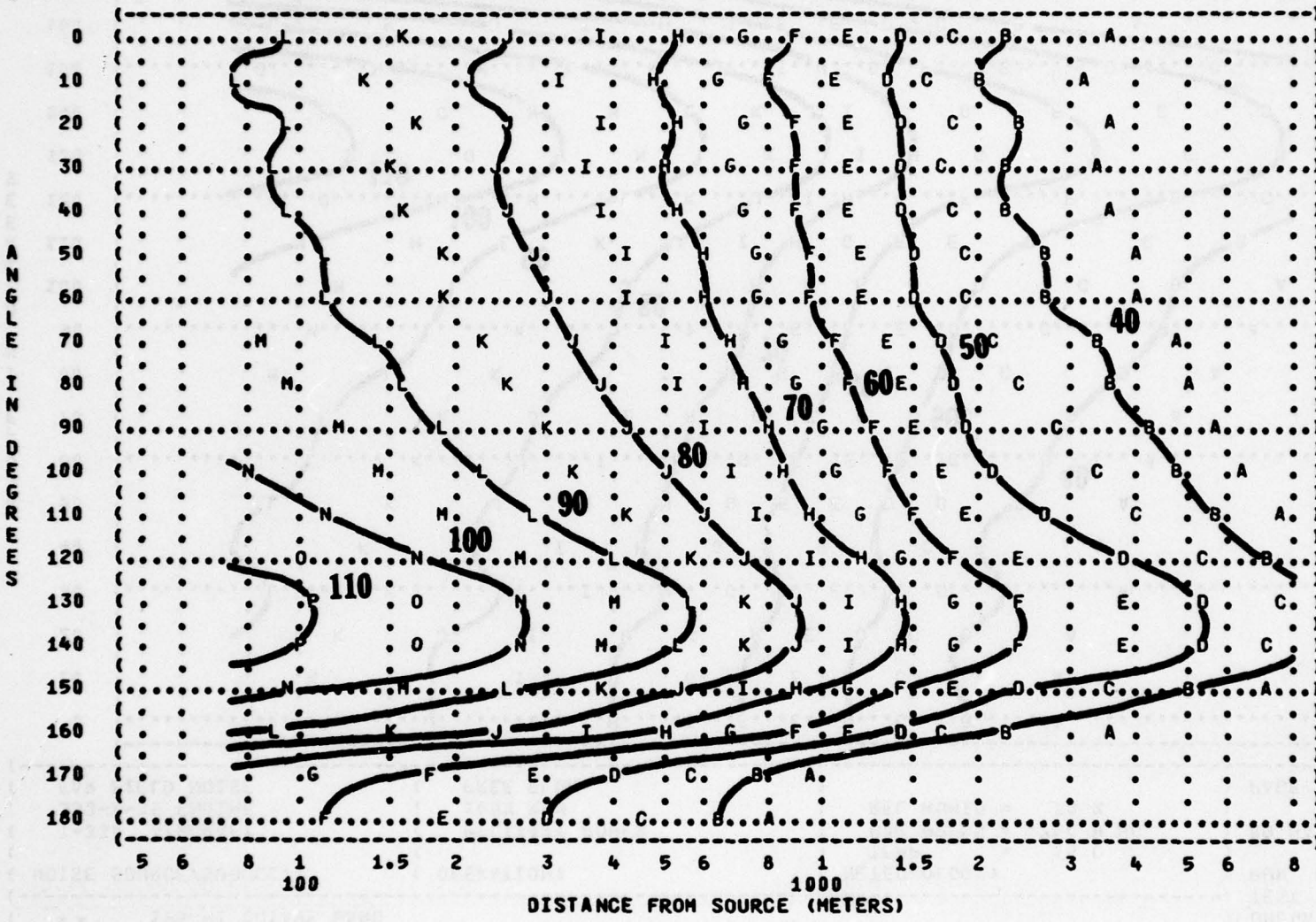
FIGURE 11: SOUND PRESSURE LEVEL (SPL) EQUAL LEVEL CONTOURS (DB) 250 HZ OCTAVE BAND

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-045
RUN 03
09 MAY 75
PAGE 21

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
MILITARY POWER
100% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %



POINT	DB
A	35
B	40
C	45
D	50
E	55
F	60
G	65
H	70
I	75
J	80
K	85
L	90
M	95
N	100
O	105
P	110

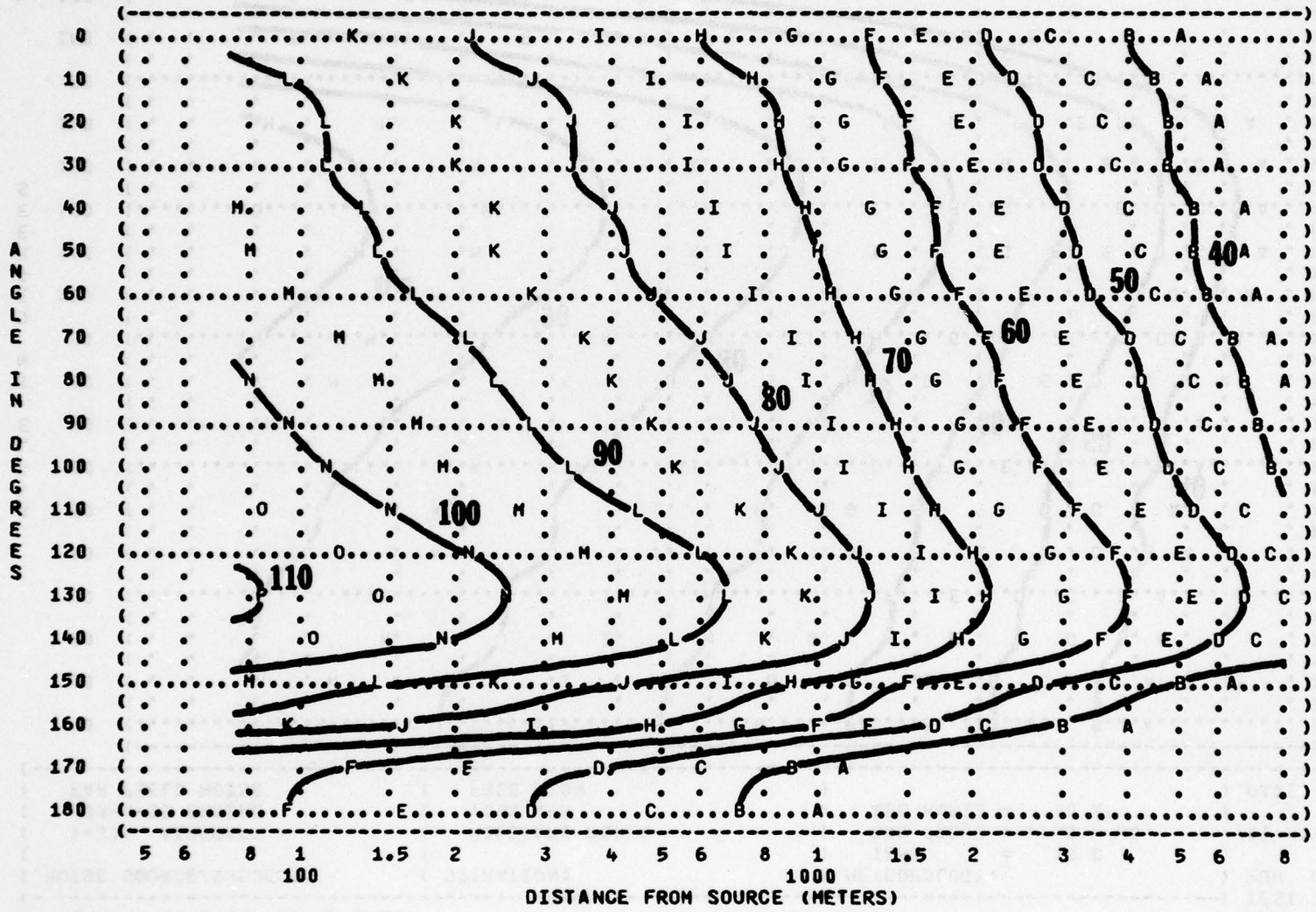
FIGURE 11: SOUND PRESSURE LEVEL (SPL) EQUAL LEVEL CONTOURS (DB) 500 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
MILITARY POWER
100% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-045
RUN 03
09 MAY 75
PAGE 22



POINT	DB
A	35
B	40
C	45
D	50
E	55
F	60
G	65
H	70
I	75
J	80
K	85
L	90
M	95
N	100
O	105
P	110

FIGURE 11: SOUND PRESSURE LEVEL (SPL) EQUAL LEVEL CONTOURS (DB) 1000 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
MILITARY POWER
100% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-045
RUN 03
09 MAY 75
PAGE 23

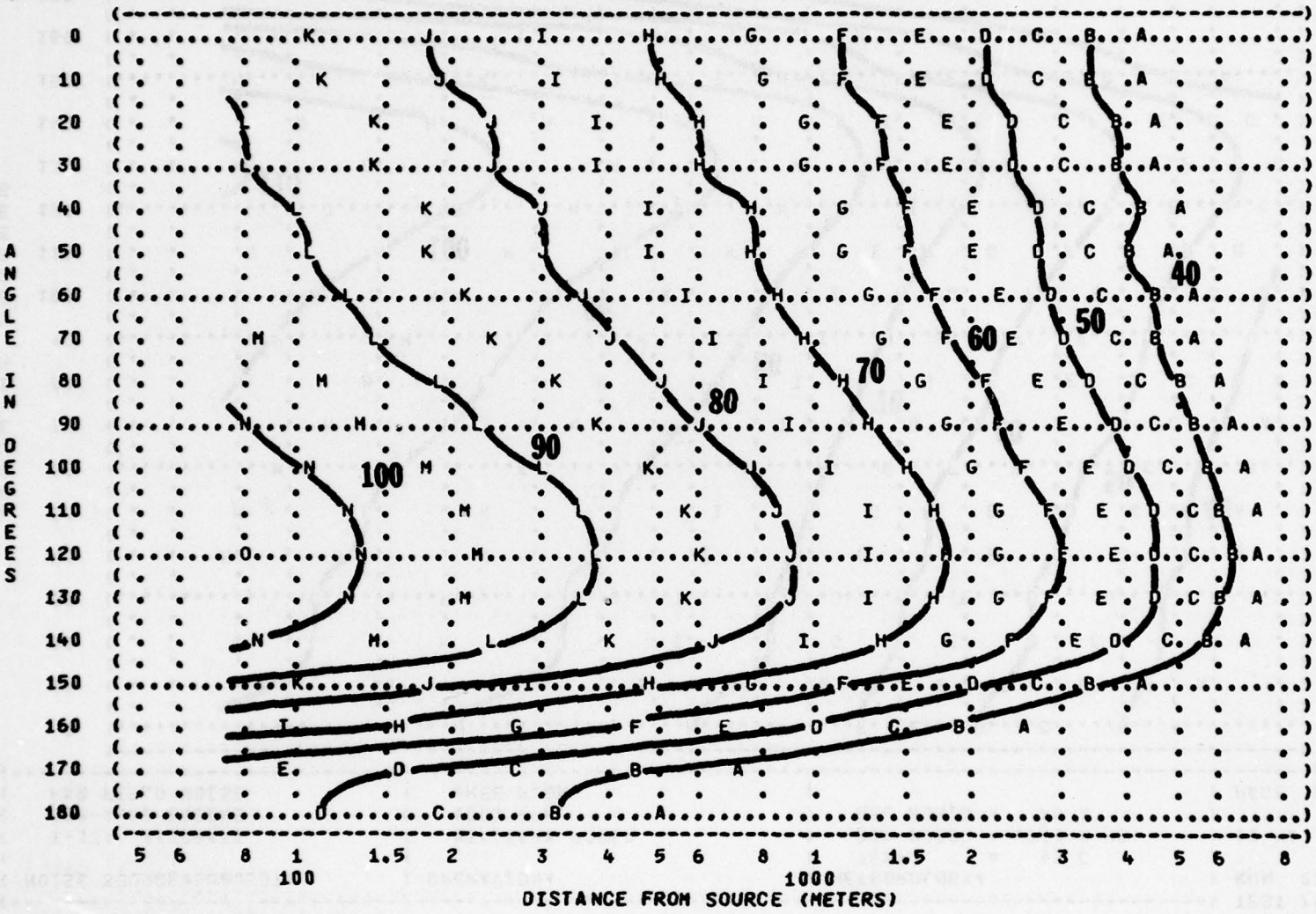


FIGURE 11: SOUND PRESSURE LEVEL (SPL) EQUAL LEVEL CONTOURS (DB) 2000 HZ OCTAVE BAND

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-045
RUN 03
09 MAY 75
PAGE 24

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
MILITARY POWER
100% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

POINT	DB
A	35
B	40
C	45
D	50
E	55
F	60
G	65
H	70
I	75
J	80
K	85
L	90
M	95
N	100

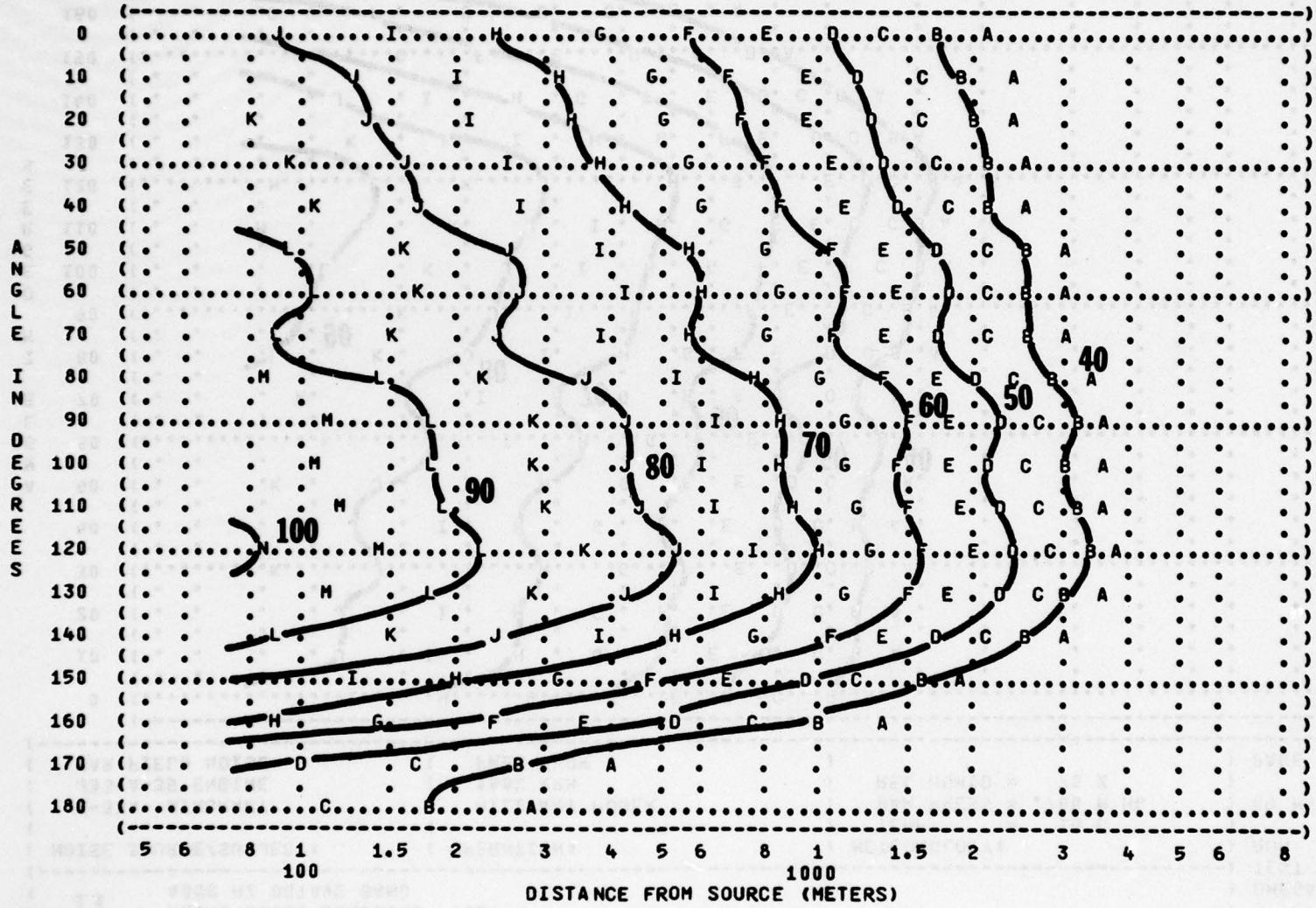


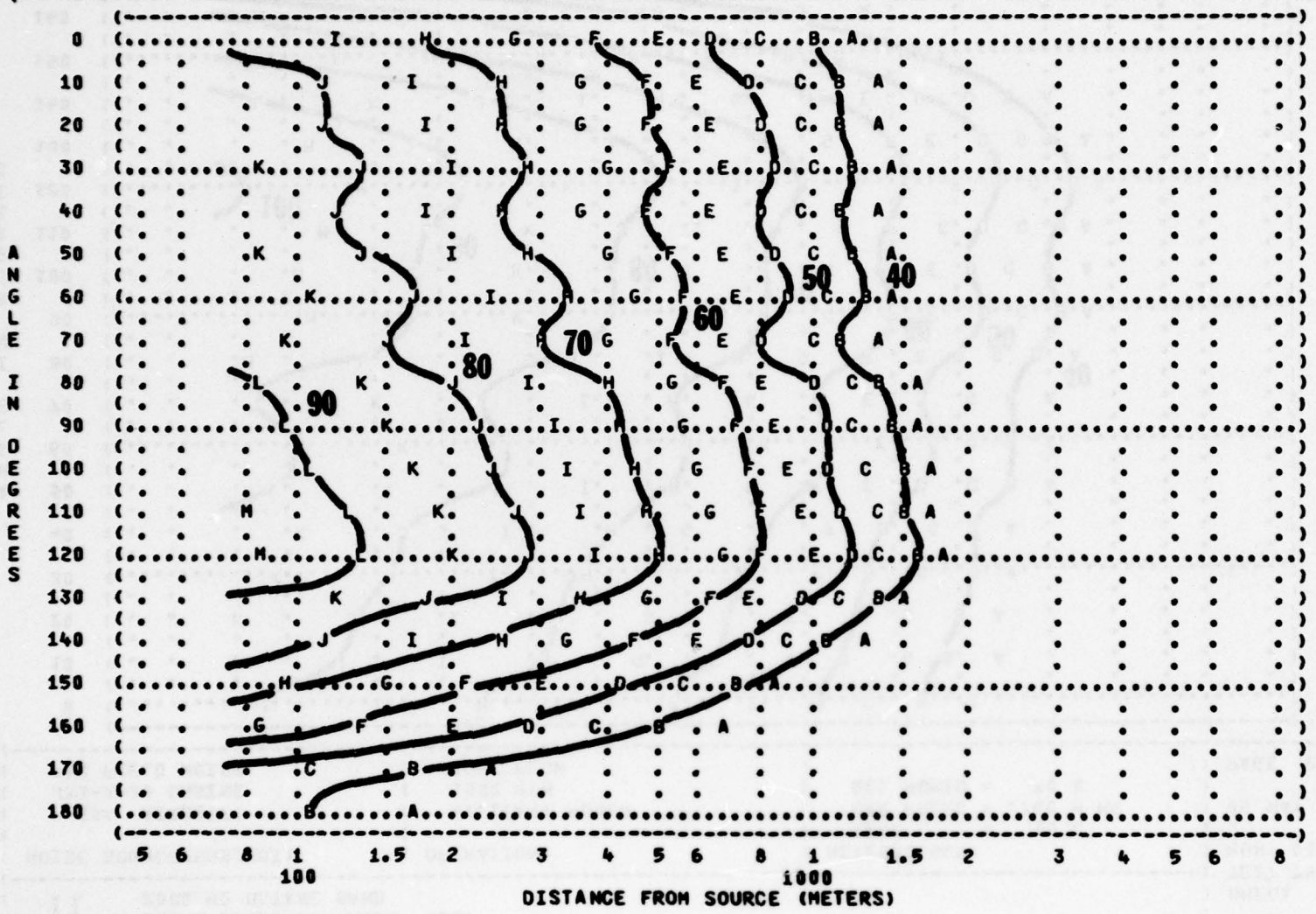
FIGURE 11: SOUND PRESSURE LEVEL (SPL) EQUAL LEVEL CONTOURS (DB) 4000 HZ OCTAVE BAND

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
MILITARY POWER
100% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-045
RUN 03
09 MAY 75
PAGE 25



POINT	DB
A	35
B	40
C	45
D	50
E	55
F	60
G	65
H	70
I	75
J	80
K	85
L	90
M	95

FIGURE: 11

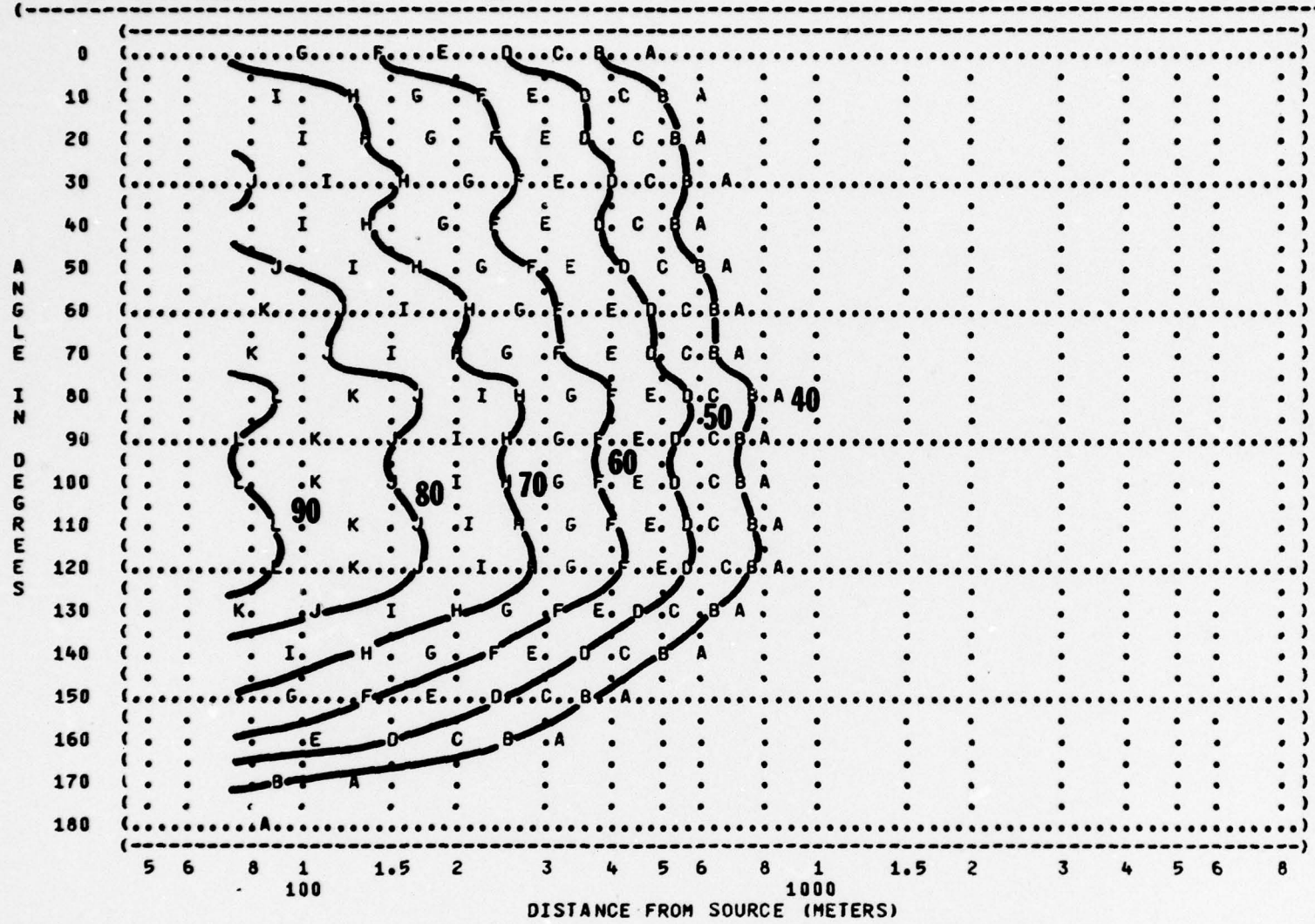
SOUND PRESSURE LEVEL (SPL)
EQUAL LEVEL CONTOURS (DB)
8000 HZ OCTAVE BAND

IDENTIFICATION:
OMEGA 1.4
TEST 75-002-045
RUN 03
09 MAY 75
PAGE 26

NOISE SOURCE/SUBJECT:
T-33A AIRCRAFT
J33-A-35 ENGINE
FAR FIELD NOISE

OPERATION:
MILITARY POWER
100% RPM
FREE FLOW

METEOROLOGY:
TEMP = 15 C
BAR PRESS = .760 M HG
REL HUMID = 70 %



POINT	DB
A	35
B	40
C	45
D	50
E	55
F	60
G	65
H	70
I	75
J	80
K	85
L	90